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Original Communications.

ARTIFICIAL DILATATION OF THE CERVIX.

BY STRICKER COLES, M.D.,

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It would be well to consider first the changes in the cervix during gestation and nature's method of dilatation. In the early months of pregnancy as the uterus grows, there is the formation of the lower uterine segment, which is formed of that part of the uterus just above the internal os, and is not a part of the cervix. The decidua of the uterine wall comes down to the upper surface of the internal os, and the cervical canal is covered with mucous membrane. This mucous membrane and its glands undergo hypertrophy, and with its increased secretion there is formed a plug of mucus, which remains for some time in the cervical canal. The cervix gradually enlarges and becomes softer as the pregnancy advances, and remains intact—that is, there is the external os, canal, and internal os just as there was before pregnancy, with the exception of the gradual enlargement and atrophy of muscle fiber. The apparent shortening of the cervix is due to the enlargement of the uterus and the marked change of uterine tissue just above, giving a more abrupt termination. The cervix remains intact usually until about the end of the thirty-eighth week of gestation, when obliteration gradually takes place, beginning at the internal os, which

gradually dilates, and then the cervical canal dilates until there is nothing left but the external os, when obliteration of the cervix is complete. Then the external os becomes thinner, and then dilates.

On examination at the beginning of obliteration in primiparæ, the cervical canal will in most cases admit the index-finger with but very slight pressure, and in multiparæ usually one finger can be easily introduced. The natural dilatation of the cervix should take about two weeks, beginning with the internal os, and this should occur without much pain. When obliteration has taken place, then the uterine contractions should become stronger and pains greater, and to have this take place in the best manner for the patient there should be a good bag of waters pouching well, and good uterine contractions pulling the cervix upward and outward. If the pains are too strong and frequent before obliteration occurs, they should be controlled with chloral in 15-grain doses, and if necessary morphine may be given. Should the bag of waters not pouch properly, which is often due to the head fitting tightly in the lower uterine segment and will not allow any of the amniotic fluid to pass, this is often easily corrected by shoving up the head, which will allow the amniotic fluid to pass, and will then remain in front of the head and act as a good dilator. The cases that give the most trouble are those in which the head is in the pelvic canal, it is not well flexed, and the occiput is often behind. The amniotic fluid will not remain in front of the head, and there is virtually a dry labor, the os requiring a long time to dilate.

The methods of dilatation depend on whether or not there are uterine contractions, whether the os is intact or obliterated, and the length of time necessary for delivery. Take first the cases where the cervix is intact with the absence of uterine contractions, and can take one or two days to deliver. Under these conditions the flexible bougie has given me the best results. After preparing the patient, using preferably two-per-cent lysol douche, as bichloride will be found too irritating, introduce the bougie into the cervix, which can always be done during the last month of pregnancy without previously dilating the cervix, along the posterior wall of the uterus unless it meets with resistance, and then to one side according to the location of the placenta, and allow the bougie to stay in until uterine contractions begin, when it should be removed, as it may rupture the membranes if allowed to stay during hard uterine contractions. This bougie usually starts labor in from eight to twelve hours, but if it should not, then two or more bougies may be introduced, or a funnel-shaped bag may be introduced into the uterus after the bougie has been in from six to eight hours, as the cervix will then be dilated sufficiently for its introduction. When the os is not obliterated but the uterine contractions are good, then the funnel-shaped bag may be used. This will be much quicker than the bougie, taking only four or five hours.

In those cases where delivery must be quickly accomplished the hand is the best dilator, using a finger of both hands after the method of Edgar and Bonnaire. Bossi's dilator, if cautiously used, will do good work, or a McLean's bag may be introduced into the cervix and gradually distended. With the hands and Bossi's dilator the cervix can be dilated in from twenty to thirty minutes. If done in less time the risk of laceration is very great, as the cervix has not had time to soften and relax. When the os is obliterated with uterine contractions, whether the membranes are ruptured or are not pouching properly, the best method of dilatation is the introduction of the funnel-shaped bag, and this should be sufficiently distended so that when it is delivered the child's head can easily follow. This bag is made of plain rubber as shown in the illustration. It can be distended to ten centimeters in diameter, which will give complete dilatation when delivered. In those cases where delivery must be completed in less than an hour, the best method for me has been the hand, using first one finger, then two, and then one of each hand, after the method of Edgar and Bonnaire. This method I think is superior to Harris's method of thumb and finger of one hand, as the finger can be carried farther into the uterus and the entire canal dilated at the same time. It also can be applied with greater ease in a small vagina. Bossi's dilator will dilate the cervix in from five to ten minutes, but in a great many cases the laceration of the cervix will be large.

In using this instrument I have taken twenty minutes to complete the dilatation, and have not had a very large tear of the cervix, not nearly as great as when using McLean's bag to complete the dilatation in the same length of time.

To summarize, the bougie will be the best dilator when there is no great haste for delivery and there is present a good bag of waters. The funnel-shaped bag should be introduced entirely into the uterus when the bag of waters does not pouch well or the amniotic fluid has escaped. McLean's bag, introduced into the cervix, may slip out before dilatation

The funnel-shaped bag.

is complete, or if distended too rapidly will tear the cervix. The Edgar and Bonnaire method of sweeping the fingers around the cervix will accomplish dilatation in twenty to forty minutes, and if carefully used will not cause a very severe tear. With Bossi's dilator it should take about twenty minutes to complete dilatation.

With all the methods, it is important that the dilatation is sufficient to allow the head to pass, for if the dilatation is not complete and the child is forcibly delivered by forceps or by version, the danger of laceration is greatly increased. In the last three years I have used the funnel-shaped bag in twenty-two cases, with good results in all. In one case only was there any complication following that could be placed to the use of the bag. In this case the membranes had ruptured when the os was the size of a quarter. After the bag was delivered the cord was found prolapsed. This may be due to the bag when being distended having shoved the head up, and in that way allowed the cord to slip by. The case was hurriedly delivered by forceps, and the child survived. In another case there was slight elevation of temperature lasting for three days, which fell to normal without interference. In this case the membranes had been ruptured for three days.

In the cases where the bag of waters has not been ruptured, or for some reason does not form in front of the child's head, and dilatation progresses slowly, the funnel-shaped bag will be found of great service. Take, for example, the case of a young primipara. She had been in active labor for six hours and the os only the size of a quarter. I saw her first two hours after active labor began, and found the head in the pelvic canal resting against the obliterated cervix, with no amniotic fluid in front of the child's head. On pushing the head up the bag of waters formed. On examination four hours later, expecting to find complete dilatation, to my surprise it was scarcely any larger. The funnel-shaped bag was introduced, and in three hours it was delivered; and in an hour the child was delivered spontaneously, with only a slight tear of the fourchette, which was closed with one catgut suture. The bag should have been introduced earlier, but not wishing to make many vaginal examinations I had waited, not expecting the amniotic fluid to recede. In this class of cases I have used this bag nine times. Four terminated spontaneously and five with forceps. In none was there a rise of temperature above 100° F., and in all of them the lacerations of the cervix and pelvic floor were smaller than if the bag had not been used.

Another case in which the bag did good work was one of twins. The membranes of the first child ruptured, and a foot and cord prolapsed into the cervix, which was the size of a half-dollar. The bag was introduced and distended with care to see that the cord was not caught. In two

hours the bag was delivered, and both children were easily delivered and survived.

From my experience I have arrived at the following conclusions: That the lives of many children will be saved; that the danger from sepsis is lessened, as the labor is greatly shortened and the tissues are not devitalized by prolonged pressure; that the lacerations of the cervix and vagina are diminished, especially by the use of the hydrostatic pressure by the bags and by the careful use of Bossi's dilator, and in this way we will get complete dilatation and will not have large lacerations, as when the child is forcibly delivered through a partially dilated cervix.

A CONSIDERATION OF THE VALUE OF TOPICAL APPLICATIONS TO THE UPPER AIR-TRACT.

By Frank Whitehill Hinkel, A.M., M.D.,
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From remote antiquity various forms of medicated applications have been made to the fauces and oropharynx—that part of the throat being readily accessible through the mouth. With the application of the laryngoscopic and rhinoscopic mirror to purposes of diagnosis and treatment came an enlargement of the area of the upper air-tract accessible to the intelligent manipulation of topical applications. So recent is this enlargement of the field of local applications that it is included in the professional experience of men who are still active in the practice of medicine.

The numerous text-books upon diseases of the nose and throat contain many formulas of medicaments for local use, with descriptions of the different methods by which they may be applied, and with directions for their use in various diseased conditions. But they give very little, if any, consideration to the manner in which these remedies are supposed to exert their beneficial effects. While the theories upon which surgical procedure is based and the statistics of the results of different operations are more or less carefully considered, the beneficial effects of local medication are, as it were, taken for granted. By frequent repetition the directions for their use seem to have acquired an axiomatic character. Even in the excellent "Handbook of Local Therapeutics" by Harrison Allen and his coadjutors the statements about the effects of the local use of different drugs are given usually without experimental evidence. In the preface the authors say: "It was known that no text was available in which the local actions of drugs were not subordinated to their general actions. In the lines of special medicine, as represented in General Surgery, Dermatology, Otology, Rhinology, Laryngology, and Ophthalmology, it was believed that the topical uses of drugs are among the most important to which they can be put, and that statements concerning them from experienced practitioners would be acceptable to the profession." As is indicated by this statement, when authority is quoted it is almost always a clinical report that is briefly referred to. Cohen, in his work "Inhalation, its Therapeutics and Practice," published in 1866, reports numerous experiments which demonstrate the penetration of nebulized medicaments into the bronchial tree, but he adduces no experimental evidence to show the effects of drugs so administered.

That there is less use of topical applications to the throat and nose than formerly is evident to every observer of experience in laryngological practice. Following the development of a rational pathology of many of the diseases of the throat and nose have arisen improved surgical procedures for the correction, where possible, of mechanical obstacles to natural repair of the lesions, or for the ablation of areas of disease. There is more dependence upon these surgical methods than upon the application, formerly so common, of sprays and of pledgets of cotton soaked in medicaments. Nevertheless many diseases remain whose manifestations are not amenable to surgery. What are we to believe concerning the efficiency of topical treatment of them?

The "Handbook of Local Therapeutics" makes this tentative classification of the local action of remedies (page 13): "All remedies act locally: (1) By restoring the normal functions, *e.g.*, by *stimulating* the blood to flow through a congested region, or by *exciting* gland action and thus promoting secretion. (2) By *protecting* a denuded surface, thus giving it rest. A protectant is also of use in ex-

cluding microbes and vibrating constituents of the atmosphere. (3) By means of *absorption* from the surface; thus constricting the small blood-vessels and checking hemorrhage; . . . creating anodyne impressions of peripheral nerve-ends for the relief of pain."

The *first* manner of local action in this classification, by stimulation, is plainly that of an external irritant, and it is to be distinguished from an internal influence upon vital action after absorption through the cell wall, as in the third manner of action. It is analogous to the contraction of a muscle in response to a touch upon the surface of the skin. Medicaments which exert an influence in this manner act as irritants to the surface. The astringent and caustic drugs probably produce their effects chiefly in this way. Indeed, the superficial irritation induced by the manipulations incidental to the making of topical applications to the nasal chambers, the nasopharynx, and the larynx, is a large factor I believe in producing whatever effects may follow the application of some of the remedies so used. I shall revert to this point again in considering local action from absorption of the medicament.

The *second* action of local remedies, as protectants, is not frequently employed in the treatment of the upper air-tract except by the use of oils sprayed upon the nasal mucosa.

Medicaments which fall under the *third* head of Allen's classification, which act if at all by absorption through the surface to which they are applied, are of particular interest in relation to the question we have propounded about the value of topical applications. We know that ready absorption is one of the chief functions and characteristics of the mucous membrane throughout the body in health. In what ways have we been able to take advantage in the air-tract of this characteristic of mucous linings?

The peculiarities of structure and function of the upper air-tract require that medicaments shall be applied to its mucous lining in some one of the following forms:

1. *Insufflations,* by means of which powders are dusted upon the surface to be treated.

2. *Inhalations* of steam or volatile substances.

3. *Gargles.*

4. *Douches,* either by piston or bulb syringe or by atmospheric pressure.

5. *Sprays,* either of water or oil, propelled by pressure of steam or air.

6. *Pigments and unguents,* which are applied by means of cotton pledgets upon suitable applicators.

1. *Insufflations* are now used mainly to apply antiseptic powders to the nasal mucosa after surgical operations. These powders are usually compounds of iodine, such as iodoform, iodol, aristol, etc., whose medicinal virtue lies in their slow liberaton of iodine under the influence of heat and moisture. The powder of course is not absorbed through the mucous membrane, the iodine is liberated very slowly, and the secretions soon carry away the insufflation. To be even slightly effective when applied to the surface of the upper air-tract these insufflations need to be repeated frequently. Except when retained in place by tampons the medicinal value of these powders is very questionable. The same objection obtains to my mind in their use upon ulcerated surfaces where they cannot be mechanically retained, as in tuberculosis or syphilis of the larynx or pharynx. Very little of the medicament comes in contact with the ulcerated surface, and that little is soon washed away. The objections to very frequent applications to these regions are obvious, and they more than balance any slight local curative effect the powder may have. Dry applications then to the mucous membrane of the air-tract, unless they can be mechanically retained, appear to offer no advantage except under unusual conditions.

2. *Inhalations* are distinguished from sprays in that they are drawn into the air-passages, while sprays are forced in by their own momentum, in part at least. The drugs applied by inhalation have active volatile principles. They are inhaled either (*a*) dry, (*b*) in steam obtained from their aqueous solution, or in warm vapors, or (*c*) in the smoke and warmth of combustion.

(*a*) The familiar "menthol inhaler," or the "smelling salts" so dear to women of an earlier generation, are examples of dry inhalations. Their essential action is that of an irritant; they create a temporary stimulation of the parts, but their repeated

or habitual use, like any continued irritation, must be injurious.

(*b*) Inhalations of steam or warm aqueous vapors: menthol, opium, and benzoin are frequently dissolved in boiling or warm water, and the steam or vapor charged with their volatile products is inhaled. The inhalation of steam from boiling water thus medicated is of benefit in acute rhinitis or laryngitis—particularly in rhinitis, in which the accessory sinuses are involved in the inflammation. In these cases the pain is probably in large part due to the confining of inflammatory secretion within the sinuses by the occlusion of their small orifices by the swollen mucous membrane. We know, from observation of their action in regions more accessible for observation, that heat and moisture favor a return to the normal of the circulation in the early stage of local inflammation. It is a reasonable inference that the hot steam has a similar action when brought in contact with the mucous membrane of the upper air-tract in sufficient amount, at a sufficiently high temperature, and for a sufficient length of time. These conditions are most easily obtained in the nasal chambers, and there the effects of steam inhalations are most positive. In the larynx and bronchial tree care is required to obtain a sufficient volume of saturated air at a sufficiently high temperature to affect the local circulation. The steam-atomizer does not supply the required heat and is an apparatus of but limited value. The croup-kettle and its modifications are much more efficient for supplying heat and moisture to the upper air-tract. Inhalations of air passed through warm medicated waters by means of a device like the chemists' wash-bottle have little value in my opinion. Neither the warmth nor the amount of the medicament supplied is sufficient. The warmth and moisture are the efficient agents where inhalations of steam or vapor are indicated. What drug is used in solution is of secondary importance. If sedatives are needed in addition, they can be administered internally for their general effect, or by other means of topical application, with much greater efficiency.

(*c*) The inhalation of smoke is used for therapeutic purposes almost exclusively to bring in contact with the mucous membrane of the air-tract the fumes of stramonium, tobacco, and that class of sedatives, to relieve asthmatic paroxysms. This method is efficient, but it has the disadvantage that its unpleasant fumes cannot be confined to the sufferer, nor often even to the room he occupies. Inhalations of finely atomized oily solutions of suitable medicaments may often be substituted to advantage for the inhalations of smoke.

3. *Gargles* have been used for centuries as a method of applying remedies to diseases of the tonsils and pharynx. So venerable a custom must be treated with respect, but, truth to tell, it is not, as usually practiced, of much efficiency. M. Mackenzie (Diseases of the Throat and Nose, ed. 1880, vol. i, p. 552) states that gargles do not bathe the parts behind the anterior pillar of the fauces—that is, the tonsils and pharynx are not touched by the medicated fluid. A practiced operator can, however, not only let the gargle lave a small portion of the pharyngeal wall and the tonsil, but he can flush slightly the posterior wall of the nasopharynx. A few experts, as they may be termed, can flush the fluid through the nasopharynx and the nasal passages and out at the anterior nares. With such training very efficient cleansing of this region can be accomplished by gargles of alkaline solutions. Very hot water held quietly in the back of the mouth and as far as possible into the pharynx may be of service in checking hemorrhage after tonsillotomy, and as a means of applying heat to a threatened peritonsillar abscess. As a means of applying medicaments to the fauces gargles are not of much service—contact is too short, and too uncertain, and the great motility of the parts and the free secretions remove from the surface and dilute very quickly whatever of the fluid may reach its destination. Furthermore, to be safe in case of accidental swallowing of the gargle it must be so dilute that its contained drug can have but little local effect. Guaiac is frequently given as a gargle in incipient tonsillitis. If the case is severe it is better to administer the guaiac by the stomach—though a heroic dose to take—and let it bathe the parts incidentally while it is being swallowed. Some of the benefit obtained from the use of gargles is due to the gymnastics of the parts involved in the act of gargling, and the advantage of this exercise of the mus-

cles of the Eustachian tube, which compose the soft palate, should not be overlooked in treating subacute inflammations of the middle ear.

4. Fluids passed in considerable volume over the surface are called *douches*. They may be propelled by piston or bulb syringes, or by atmospheric pressure. Their purpose is usually to cleanse from the surface accumulated secretion and epithelial débris. They are at times used to supply heat and moisture, as in irrigations of the auditory canal in earache. Alkalies and antiseptics such as sodium bicarbonate, common salt, borax, boric acid, and the numerous proprietary solutions of antiseptics, are the kinds of drugs usually applied in this manner. The solvent effect of alkaline solutions upon inspissated mucous secretions is well known. The antiseptics, when we can apply them in sufficient strength and for a sufficient length of time, diminish the tendency to decomposition of retained secretions; but this effect, under the usual conditions of their application, can be but small. More depends upon the thoroughness with which the secretions are removed than upon the particular antiseptic mixture which may be employed. Some of our text-books emphasize the danger of inducing inflammation of the middle ear by the use of douches in the nasal chambers. If too large a volume of fluid is not used, nor too much force in its application, there is little danger to the ears. A small urethral syringe may be used to douche the nasal chambers through the anterior nares. A larger syringe with a long curved tip is a satisfactory means to flush the nasopharynx and the nasal chambers from the back. The solution should be at least tepid for use in this way. The patient should be instructed to let the excess of fluid return from the nose—the head being bowed forward—and then to blow with the nose open, not pinched shut in the manner in which the nose is usually blown. Under no consideration, however, should the nose be irrigated with the fountain douche or any syringe which propels a large volume of fluid with considerable force. Failure of the fluid to escape freely from the nasal chambers, or an involuntary act of swallowing with its accompanying patency of the Eustachian tube, may be followed by infection and inflammation of the middle ear.

5. *Sprays* have been used very extensively during the past thirty years in the treatment of diseases of the upper air-tract. The manufacture of atomizers has become a large industry, and their sale a source of revenue to the druggist. Our patients with disease of the nose or throat expect to spray and to be sprayed. Spraying aqueous or oily fluids upon the surface of the upper air-tract is undoubtedly the least irritating manner in which medicaments can be applied to this surface. Finely nebulized solutions penetrate also far into the recesses of this intricate region. But do the medicaments thus applied produce any pronounced effect upon the local conditions of disease? It may at once be stated that except in the larynx and trachea the spray is not so efficient a manner of cleansing the mucous surfaces as is the douche properly applied. We may therefore confine our consideration of the efficiency of nebulized solutions to those medicaments which are used to produce some change within the mucous membrane after absorption rather than upon its surface.

6. As *pigments*—medicaments applied by means of cotton pledgets upon suitable applicators—also are used usually to effect some change within the mucous membrane rather than upon its surface, it will economize time to consider the efficiency of pigments while we are discussing the value of medicated sprays.

In considering this question it is necessary to have clearly in mind the characteristics of the surface we propose to medicate locally; and also to have some conception of the manner in which we may reasonably expect our topical application to produce any effect. In health the mucous lining is essentially alike in structure throughout the body. According to Kyle it presents (1) an epithelial layer of varying thickness, (2) a basement membrane upon which the epithelial cells rest, and (3) the submucous connective tissue in which ramify the blood-vessels, lymphatics, and nerves essential to the life of the layers above. The rapidity with which fluid is absorbed is a physiological characteristic of mucous membranes. It is upon this rapidity of absorption that we depend for the effects of topical applications. We know that a strong solution of cocaine or of adrenalin may be applied to the dry, horny epithelium of the skin

for a long period of time without apparent physiological effect. A similar solution applied to the nasal mucous membrane for but a few seconds will produce an appreciable effect. We have to do then with a surface of great capabilities as an absorbent. We may expect medicaments to act upon these absorbent mucous membranes (1) by cleansing the surface, (2) by irritating the surface and thus affecting the capillary circulation, and (3) by affecting the deeper layers of the mucous membranes through the influence of the drug absorbed through the epithelial layer.

1. As has been said, pigments are seldom used for cleansing purposes, and the spray is distinctly inferior in general use to the douche as a cleansing measure. So drugs which act in the manner indicated in our second and third classifications, either by surface irritation or by absorption, are alone efficient when applied by the spray or as a pigment.

2. Sprays are not so efficient for the application of irritants as our pigments unless the amount of stimulation required is slight. The spray cannot be confined to a limited region, and the medicament must therefore for safety have a degree of dilution which may interfere with its efficiency. The physician who has acquired sufficient dexterity can place the medicament as a pigment upon the spot desired in such strength as his judgment dictates with greater precision than is possible or safe by use of the spray. The spray may then be regarded as an adjunct in the use of stimulant topical applications rather than as the method of chief value. Even in the bronchial tree injections of weak oily solutions of volatile substances, such as menthol, camphor, and creosote, have been found in some cases to be followed by more relief of irritative cough and expectoration than had been secured by the inhalation of the same or stronger solutions in the form of a spray.

Having decided so much about the method of application, let us inquire what grounds we have to believe that the application of irritants to diseased mucous surfaces is of therapeutic service. The flush that follows immediately the application of heat—as after a hot foot-bath—exemplifies the effect upon the circulation of a superficial irritant. The redness produced by a mustard application shows a similar effect from volatile vegetable irritant. Rubbing produces the same dilatation of the superficial vessels. A chemical irritant does the same. If the skin reacts to irritant applications, still more may we expect the more sensitive and less protected mucous membranes to do so. The therapeutic effects which we may expect to obtain from irritant applications depend upon the condition of the surface to which we apply them. If an astringent or irritant be applied to a normal mucous membrane symptoms of the early stage of inflammation are produced—turgescence and serous discharge with increased sensitiveness of the surface. The tissue is responsive, and a decided effect upon its circulation and secretion is evident. If on the other hand the mucous membrane has undergone the sclerotic changes of long continued chronic congestion it is indeed a different tissue with which we have to deal. Kyle (Diseases of the Nose and Throat, ed. 1899, p. 57) describes thus the effects of chronic catarrhal inflammation: "Permanent alteration in the tissue will result from the infiltration of the submucosa by the leucocytes and serum. This embryonic tissue is produced by the proliferation of the migrated leucocytes and the fixed connective tissue cells, which, if nutrition be adequate, goes on to organization and the formation of a fibrous structure which alters the nutrition of the submucosa by contraction and impairs the functional activity of the mucous glands. . . . By organization of this inflamed exudate, together with a proliferation of the fixed connective tissue cells, the so-called hypertrophic condition is brought about." Here we have a condition upon which medicaments can have manifestly but little effect, and irritation cannot restore the function of disorganized tissue. It is then in the later stages of subacute inflammation that we may expect to obtain whatever beneficial influence irritant or astringent applications may possess, rather than in advanced chronic processes. I have frequently reflected in considering the results of the use of different topical applications, especially for stimulation, upon how much of the effect is due to the mechanical effects of the application—the massage of the parts which accompanies the manipulation of the cotton pledget. Can the superior efficacy of the direct ap-

plication of a silver salt to the inflamed larynx over its use as a spray be ascribed to the mechanical effect?

Tannic acid and the silver salts may be taken as the types of the vegetable and mineral astringents. Tannin is a pure astringent and irritant. In solution with glycerin it undoubtedly causes contraction of engorged superficial blood-vessels, and thus indirectly—and perhaps by direct action of the epithelium—tends to lessen mucous secretion. Its range of service is limited, however, and it is perhaps more used as a gargle for relaxation of the pharyngeal mucous membrane than for any other purpose. It causes irritation of the nasal mucous membrane, and is not used as a topical application to this region. Silver nitrate is a time-honored remedy, not now used so much nor so promiscuously in the treatment of diseases of the upper air-tract as formerly. When, however, it is thought advisable to stimulate the circulation by surface irritation, it is one of the most efficient means at our disposal, the strength being graduated to the purpose. Wood (Therapeutics, 3d ed., p. 50) says: "As an antiphlogistic, nitrate of silver acts not only as an astringent, but also in some way not clearly understood." It seems a not improbable hypothesis that the antiseptic properties of the silver may play a part in its action upon inflamed mucous surfaces. In the form of the nitrate salt the possible value of silver as an absorbable antiseptic is limited. The coagulation of the albumin of the epithelial cells which follows its use must check their vital absorbent powers. Some of the newer preparations of silver in which the mineral is in combination with an organic product are in theory, on account of their freedom from irritating effects, and on account of their absorbability, of greater activity as an antiseptic when applied upon living surfaces than is silver nitrate. However, our estimates of the value of topical applications are untrustworthy because they are based exclusively on clinical sequences which we can only infer to be a result of such applications. Who shall decide whether in a given case they are *post hoc* or *propter hoc?*

3. We are led by the consideration of this organic combination of silver directly to the subject of the topical use of drugs which act chiefly by their absorption into the tissues. That such absorption occurs very promptly we have seen in the use of cocaine and adrenalin. We know that cocaine is absorbed and enters the general circulation, for the application of even a weak solution to the nasal mucous membrane is followed in susceptible subjects by mental exhilaration and sleeplessness. We have no other drugs whose effects are so pronounced and sensational, so to speak, as those which follow topical applications of cocaine and adrenalin. Nebulized solutions of atropia inhaled in sufficient strength and quantity will, if repeated, produce in time mydriasis, but not from a momentary contact with the mucous surface. Our topical applications to the upper air-tract are usually made but momentarily, and probably are soon discharged from the nose or are carried into the stomach by the mucous and serous secretions. There is need of some laboratory experiments on the absorbability of medicaments by the nasal mucosa to make clear the foundation of our belief in the efficacy, when applied to the upper air-tract, of drugs which act by absorption. Clinical evidence, as we know, is not reliable.

Iodine and its salts are good types of the medicament used locally to influence favorably by absorption chronic inflammations of the nose and throat and Eustachian tubes. When a solution of iodine in glycerin is painted upon the nasal mucosa its excess for a short time stains the handkerchief. In a few moments it ceases to do so. Is the iodine absorbed, or compounded with the secretions into colorless salts, or merely washed from the surface by the secretions? It seems clear that iodine, which when taken internally acts favorably for the absorption of new and incompletely organized tissue, such as a syphilitic gumma, can have no appreciable effect upon advanced connective tissue infiltration such as occurs in the advanced stages of a chronic catarrhal inflammation. If useful at all when applied locally iodine is of service in the early stage only of a chronic inflammation. Here, however, the tissues are sodden with serous and round-cell exudation. Such a tissue is not a good absorbent. It is a common experience that cocaine has but a limited anesthetic effect—that it is not freely absorbed—when it is applied to mucous membranes

acutely inflamed, or which have been the seat of a recent operation. It is my opinion that a considerable portion of the effects which follow the topical application of solutions of iodine are due to the mechanical influence of the cotton pledget upon the circulation of the part.

What then are to be our conclusions about the effects of topical applications? Are we to accept a "therapeutic nihilism?" By no means. With the present limitations of our knowledge of the effects of topical applications too confident a skepticism is as unwarranted as too great credulity. We must admit, however, that the indications for the use of local medicaments in chronic inflammations of the upper air-passages are not so definite in many cases as are the indications for surgical interference. I would make the following tentative summary of the value of topical applications to the upper air-tract in a spirit the reverse of dogmatic:

1. Insufflation of powders is not an efficient form of local medication of the upper air-tract.

2. Inhalation of medicated steam is of service in the early stage of catarrhal inflammation—the higher the temperature and the saturation of the inhalation the greater is its efficiency. Dry inhalation of the volatile parts of drugs is of little utility. Inhalation of smoke from a smudge of suitable medicaments will usually control a paroxysm of asthma, but finely nebulized oils suitably medicated are more elegant when equally efficient.

3. Gargles are of little value unless the patient be directed and trained to use them in a way to give the greatest possible access to the pharynx and nasopharynx. They can be used occasionally as an efficient means to cleanse the nasopharynx and nasal chambers.

4. Douches are used chiefly to apply cleansing alkaline solutions to the nasal passages and the nasopharynx. Cleansing solutions are the most important topical applications in the upper air-tract. Much irritation is kept up by decomposed secretion retained mechanically in the various recesses of this region, and the douche is the most efficient means for its removal. Care must be taken that fluid be not used in this way in too large amount or with too much force lest infection be carried to the middle ear.

5. Drugs used for other than cleansing purposes act chiefly either as irritants to the surface of the mucous membrane or by absorption into its tissues. Such medicaments are best applied as pigments or sprays. Both irritants and absorbents in the hands of the physician should be applied usually as pigments directly to the region which it is desired to affect. This is true even within the larynx and the trachea. In the trachea the medicament may be injected through the glottis directly upon the tracheal walls. Sprays should be reserved usually for use by the patient during the intervals between local treatments by the physician, if it be desired to keep up a continuous influence of a drug.

6. We have positive evidence of the prompt absorption by the mucous lining of the air-tract of certain active drugs—as cocaine, adrenalin, stramonium, and atropine. Experiments in regard to the relative absorbability of various drugs by this route are needed to establish a more certain and rational local therapeutics of the nose and throat.

7. It is not improbable that the massage attending the application of pigments to the mucous surface is an important factor in producing reactions in the circulation and in the glandular secretions.

8. While we continue to lack experimental knowledge of the local effects in the upper air-tract of drugs topically applied, local therapeutics must remain inferior to surgery in accuracy of application and in efficiency in the treatment of most of the chronic diseases of the nose, ear, and throat.

MODERN HYPNOTICS.

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The use of drugs for the production of sleep dates back to remote antiquity. From such literature as has survived we know that the Egyptians, Assyrians, Hindus, Chinese, Greeks, and Romans were well acquainted with some of the hypnotics employed at the present time. All of the ancient sleep-producing agents belonged to the vegetable kingdom, among the most prominent being opium, canna-

bis indica, hyoscyamus, lettuce, and hops. Opium was in use as far back as the times of Hippocrates, and it is an interesting fact that Dioscorides, a Roman physician, speaks of the juice of lettuce being employed to adulterate opium. He states that lettuce when eaten at night induces sleep, and the custom even in vogue at the present time of taking lettuce toward the close of a meal probably originated from the observation of its soporific influence. Opium, however, constituted the most efficient remedy for sleeplessness among the ancients, and is still an indispensable hypnotic, although its field has been greatly restricted by the discovery and introduction of the synthetic sleep-producers, to the consideration of which this article is devoted.

The stress of modern life has greatly contributed to the increase of insomnia, and among its common causes are mental overwork and the worries and anxieties incident to the struggle for existence, late and irregular hours of sleep, and the prevalence of affections of the nervous system, such as hysteria, neurasthenia, and other neuroses. It is to this universal prevalence of sleeplessness that the constant efforts of the pharmaceutical chemist to discover new hypnotics is to be directly ascribed, being, so to speak, a case of demand and supply.

Before discussing the hypnotics which modern chemistry has placed at the disposal of the physician, it might be of interest to say a few words on the subject of sleep in general. On studying the various theories that have been brought forward to explain the physiology of sleep no one can fail to be impressed by the want of unanimity on this question. In view of the analogy between sleep and the coma of epilepsy it has been attributed to hyperemia of the brain, compressing the conducting paths and thus cutting off communication with the outer world. Another explanation is that there is an inhibition of the activity of the neurons through interruptions of the nerve current variously produced. Duval thinks that during consciousness the dendrites are in contact, but become separated during sleep. A plausible and attractive theory is that of Preyer, according to which during the waking period certain products generated in the metabolism of the nerve centers are gradually accumulated, which finally produce sleep, acting, as it were, as physiological narcotics upon the sensorium. According to Pfluger sleep results from the exhaustion following the active metabolism of the waking period. Dr. H. Richardson, in a most instructive article published in *American Medicine* of April 18, 1903, reviews the different theories, and is inclined to believe that fatigue of the motor centers produces peripheral arterial dilatation with consequent anemia of the brain. He refers to some experiments made by Professor Howell of the Johns Hopkins Hospital, which show that a dilatation of the peripheral arteries takes place, with a consequent withdrawal of blood from the cerebral cortex. On account of this the amount of arterial blood passing through the brain is diminished, and there is a reduction of the metabolism of the brain cells. On the other hand, Leonard Hill believes that the actual cause of sleep is the increased proportion of venous blood and not a reduction in arterial pressure. Besides the fatigue of the vasomotor centers Howell also attributes sleep to the fatigue of those psychical areas of the brain which functionate most actively during wakefulness.

During natural sleep the frequency of respiration is reduced, the volume of inspired air diminished, and the breathing becomes almost entirely thoracic or costal (Richardson). According to the same author there is a decrease in the elimination of CO_2, and an increase in the absorption of oxygen. The heart action becomes weaker and slower, the peripheral arteries dilate, and there is a slight fall in temperature. Whether sensibility is increased or diminished during sleep is a moot question. It has been shown that there is no abolition of the reflexes or of the voluntary muscles, as demonstrated by the fact that a sleeping person will turn about in bed without waking. As Richardson justly says: "These differences of opinion are probably due to the methods of investigation; those who find sensibility deadened have observed conscious sensation, not sensibility, while those who say sensibility is increased have observed reflex acts." The factors concerned in the production of sleep are summarized by him in such an excellent manner that I cannot refrain from quoting his conclu-

sions: "There are three main factors in the production of sleep: (1) Diminution of irritability caused by fatigue of portions of the cortical area; (2) voluntary withdrawal of sensory and mental stimuli involved in the preparations for sleep; (3) diminished blood-supply to the brain owing to relaxation of tone in the arteries from fatigue of the vasomotor center, and the consequent reduction in the pressure and bulk of blood in the brain. If anemia of the brain were the sole cause of sleep, syncope would be sleep, but in syncope there is a loss of consciousness due to anemia, but there is not sleep.

"The nervous theories of sleep are defective because they do not point to a fundamental cause. Crichton Browne's remark that the arteries were made for the brain and not the brain for the arteries is very apt, as the amount of blood going to the brain is regulated by the functional activity of the nervous tissue. It is very evident from the foregoing that during sleep consciousness is arrested, so that sleep is the resting time of consciousness, but the arrest of consciousness is not necessarily sleep."

Owing to this lack of knowledge in regard to the physiology of sleep we are equally ignorant of the exact way in which sleep is produced by hypnotics. In studying their action we must distinguish between narcotics, which produce unconsciousness by intoxication, and the true hypnotics, in which the sleep resembles the normal, the former being represented by opium and the latter by chloral.

In view of the fact that the sleep produced by opium and its derivatives is often attended with undesirable by-effects and discomforts on awaking, and that during their prolonged administration the element of habituation must always be considered, they have been more and more reserved for cases of insomnia due to the presence of severe pain, and have been largely replaced in other forms of sleeplessness by the synthetic hypnotics. Before discussing these, it must be emphasized that none of them exactly reproduce the conditions present in normal sleep, although they approximate more closely to this standard than the narcotics.

It is to Liebreich that we owe our knowledge of the hypnotic effects of Chloral Hydrate, $CCl_3.CH(OH_2)$, the first of this series of drugs, which was introduced by him into medical practice in 1869. It was assumed by him that the hypnotic action of chloral was due to its decomposition into chloroform and formic acid in the blood through the alkalies present, but later v. Mering showed that this was not the case, and that chloral acted either as such or after being converted into trichlor-ethyl alcohol. Chloral occurs in colorless, transparent, rhomboidal crystals, having a burning taste, and is soluble in less than one part of water, as well as in alcohol, ether, chloroform, and in fixed oils. Like all derivatives of chloroform it has a depressing action upon the heart, numerous cases of fatal results being on record, and this has led to its being largely replaced by other and safer remedies. The toxic dose, however, differs greatly, 30 grains having been known to produce death, although as much as an ounce has been taken without fatal effects. In many respects the sleep produced by chloral resembles the normal, there being also a weakening of the heart action, a slowing of the respiration, a falling of blood-pressure, and anemia of the brain, but here the resemblance ends; for in other respects it acts as a toxic agent, especially when its use is continued for some time, as is shown by the symptoms of chloralism. Chloral finds no place in the modern treatment of persistent insomnia owing to the danger of habituation, and although an excellent hypnotic and sedative for occasional use, it must be avoided in the presence of feeble heart action.

Butyl Chloral Hydrate, $CH_3CHCl.CCl_2.CH(OH)_2$, exerts a powerful but very transient hypnotic action, and also produces marked gastric irritation. For these reasons it has never been able to compete with chloral hydrate.

Chemically related to chloral is Paraldehyde $(CCl_3.CHO)_3$, which was introduced by Cervello in 1883. It forms a clear fluid of an unpleasant taste and smell, which is soluble in water, alcohol, and ether. While having a less injurious action than chloral upon the circulatory apparatus, it has the disadvantages of a very repugnant taste, of causing irritation of the stomach, and of requiring to be administered in large doses. It acts more slowly than chloral, but, like the latter, is not free from risk of habituation. The dose ranges from 2.0 to 4.0 grammes.

After the introduction of paralydehyde

v. Mering determined the hypnotic properties of amylen hydrate, $(CH_3)_2.C.(C_2H_5)OH$. It is a colorless, limpid fluid of peculiar penetrating odor, similar to that of peppermint, with a boiling point between 99° and 103° C. It is soluble in 8 parts of water and miscible with alcohol, ether, and glycerin. Owing to its disagreeable taste and odor, and the large size of the dose, 2.0 to 4.0 grammes, it has never come into general use.

The next substitute for chloral hydrate was Chloralamid, or chloral-foramid, $CCl_3CH.OH.NH.COH$. It appears in the form of colorless crystals, soluble in 20 parts of cold water, and freely dissolving in alcohol. It slowly liberates chloral in the organism, and acts more feebly than the latter, sometimes giving rise to symptoms of intoxication and marked reduction of temperature.

The combination of chloral with ammonium, Chloral Ammonium ($CCl_3CH.OH.NH_2$), was introduced with the idea that the injurious depressing action of chloral upon the heart and respiration might be prevented. It forms colorless crystals, almost insoluble in water, and has been employed as a hypnotic in doses of 1.0 to 2.0 grammes, but only to a limited extent.

Chloralamid, $CCl_3CH\text{-}NH$, is a crystalline powder, almost insoluble in water, but easily so in alcohol. The dose is 1.0 to 4.0 grammes. While less depressing than chloral, it is not free from the risk of poisonous effects.

To obtain combinations which would split up into chloral in the system Henriot and Richet experimented with various chloralids, especially the lactic acid chloralid, but without producing active hypnotic substances. Heffter by a reaction between glucose and anhydrous chloral produced chloralose, $C_8H_{11}Cl_3O_6$. This is a crystalline bitter powder, soluble in 170 parts of cold water, but dissolving easily in alcohol and hot water. The dose ranges from 0.2 to 0.5 grammes. Chloralose, however, has never gained any prominence as a hypnotic, one of its chief disadvantages being its tendency to produce transient toxic effects, such as convulsions, mental disturbances, and profuse perspiration. It is very difficult to gauge the dose, as unpleasant by-effects are frequently observed from the administration of even 10 grains.

Henriot and Richet have combined chloral with pentose in place of glucose, with the production of arabino-chloralose and parabino-chloralose, but neither of these has been sufficiently tested to permit of any definite comments as to its hypnotic action.

A further investigation, with a view of obviating the unpleasant and injurious features of chloral, resulted in the discovery of dormiol and chloretone.

Dormiol is a condensation product of chloral with amylen hydrate, the latter constituent also possessing hypnotic powers. It is a colorless oily fluid, dissolving in alcohol, ether, and oils, and owing to its rather unpleasant taste is dispensed in gelatin capsules in a 50-per-cent solution. The dose varies from 1.0 to 1.5 grammes. It is claimed to be free from risk, and no by-effects have been reported. It is, however, yet too early for any definite statements on this point, as the literature is very limited.

Chloretone is a combination of chloroform and acetone, $CCl_3(CH_3)_2.C.OH$, and appears as a white crystalline powder, with a camphoraceous odor. It is only slightly soluble in water, but easily so in alcohol and ether. The dose ranges from 0.3 to 1.3 grammes. As a hypnotic chloretone has been shown to possess some advantages over chloral, although not completely devoid of unpleasant effects. Its use as a local anesthetic and antiseptic has, however, largely overshadowed its employment as a hypnotic.

In the *Therapeutische Monatshefte* for September, 1903, Dr. Impens has reported on a new hypnotic allied to the chloral group, which has been named Isopral. As has already been mentioned, v. Mering showed that chloral hydrate decomposed in the blood into tri-chlor-ethyl alcohol, to which its hypnotic influence was probably attributable. It was therefore thought that this substance might prove a useful soporific agent, and in the course of his studies on this subject Impens investigated the tri-chloro-iso-propyl-alcohol (Isopral), $C_3H_5OCl_3$, which he found to possess a number of advantages over chloral. Isopral is a crystalline powder, with a melting point of 49° C., soluble in water to the extent of 3.3 per cent, and dissolving in alcohol and ether. It has a camphoraceous odor and a somewhat pungent taste. From the physiological and

clinical experiments thus far made isopral seems to be a very prompt and efficient hypnotic, which is much less toxic than chloral, and free from its depressing effect upon the heart and respiration in ordinary doses. In doses of 0.5 to 0.75 gramme it may be employed in all conditions in which chloral hydrate is indicated. The clinical evidence, however, is too meager to allow of any definite conclusions as to its future place in the hypnotic group.

SULPHONE GROUP.

This group is represented by trional, sulphonal, and tetronal. The last named, however, has never come into prominence. These substances, which were discovered by Baumann, are characterized particularly by their stability. Although unaffected by acids, alkalies, and oxidizing or reducing agents, they decompose in the organism, and then give rise to their hypnotic effects.

Little is known concerning the changes which trional and sulphonal undergo within the body, the theory generally accepted being that they split up into sulphonic acids. As both these drugs approximate in their physiological action it will be best to consider them together. Sulphonal, $(CH_3)_2C(SO_2C_2H_5)_2$, forms colorless, permanent crystals of a bitterish taste, with a melting point of 125° to 126° C., soluble in 100 parts of cold and 50 parts of boiling water. The average dose varies from 1.0 to 2.0 grammes. Trional, $C_2H_5CH_3C(SO_2C_2H_5)_2$, occurs in colorless, glistening, tabular crystals, with a melting point of 76° C., soluble in 320 parts of cold water and freely soluble in hot water, the dose being about the same as that of sulphonal.

Contrasting their action, sulphonal acts more slowly than trional, which is due to the fact that the latter is more easily absorbed and decomposed in the organism. The sleep produced by both resembles closely the normal as regards the heart action, arterial tension, respiration, and gaseous exchanges. There are certain precautions to be observed during their continued use which were formulated by Kast in his initial studies, and it is to the neglect of these that the sequelæ occasionally noted have been chiefly attributable. Both sulphonal and trional should be administered in some warm fluid, as in this way they act much more promptly, and cumulative effects are prevented. During the continued administration attention should be given to the bowels, so that the patient has at least one free movement a day, and the alkalinity of the blood should be increased by the administration of alkalies, such as bicarbonate of sodium or alkaline mineral waters. It has been suggested by Habermann that trional is advantageously administered in carbonated water, in which it is completely soluble. This form of administration is said by him to have the advantages of rapidity of effect and absence of all sequelæ.

In view of the universal use of sulphonal and trional as hypnotics during the past ten years it is remarkable that by-effects are exceedingly rare, and this is the more surprising on account of the frequently faulty method of administration. The only effect to which attention has been directed in recent years is the occurrence of hematoporphyrinuria, especially under the use of sulphonal. This condition, however, cannot be directly attributed to these hypnotics, but seems to be rather the result of an idiosyncrasy. A study of the cases reveals in most instances that the drugs had been given continuously without any of the precautions above mentioned. V. Mering, who some years ago made a very thorough investigation into this subject, concluded that when it does appear other factors must always coöperate, such as deficient nutrition, persisting depression of the general system, and other causes yet unknown. In his belief these drugs have been employed in too large doses, and he finds that 15 grains of trional is generally sufficient. During their continued administration he advises that they be employed in alternation with other hypnotics and with strict observance of the above precautions.

UREA GROUP.

The earliest example of this group was Ethyl Urethane, or ethyl carbamate, $(CO)NH_2OC_2H_5$, which was discovered by Schmiedeberg in 1885, and introduced by v. Jaksch into medicine. It forms colorless, odorless crystals, or scales, soluble in one part of water, and freely soluble in ether and alcohol. The dose ranges from 1.0 to 5.0 grammes. Although possessing all the elements of safety, urethane never came into vogue on account of the mildness and uncertainty of its action. Its only

field is in cases of nervous insomnia, and even here it has been but little employed. Another disadvantage is that it frequently produces profuse diuresis, and thus disturbing sleep.

Methylurethane (urethylan) occurs in colorless plates, soluble in water and alcohol. It possesses hypnotic properties, but has never been sufficiently used to permit of any conclusions in regard to its value.

Hedonal, or methylpropylcarbinolurethane, $C_6H_{13}O_2N$, was discovered by Dreser as the outcome of a series of investigations having for their object the modification of urethane in such manner that while retaining its safety its hypnotic power would be increased. It is a white crystalline powder, almost insoluble in water, but dissolving in alcohol and ether. The dose varies from 1.0 to 2.0 grammes, but as much as 6.0 grammes have been given without unpleasant effects. There can be no doubt that hedonal is a material improvement over urethane, which it surpasses in efficiency and promptness of action, but it cannot compare in power with some of the hypnotics mentioned above. Its chief field of application is in the milder forms of sleeplessness, and also in mental diseases without marked excitement. In all these conditions it has proved a very useful, agreeable, and safe soporific.

The latest addition to the urea group of hypnotics is Veronal, which, judging from the literature so far published, seems to be a useful sleep-producing agent. Chemically it is diethylmalonylurea, $C_8H_{12}N_2O_3$, and forms a white crystalline powder, fusing at 191° C., soluble in about 12 parts of boiling water and in 145 parts of cold water. The dose varies from 0.5 to 1.0 gramme. It is recommended to be given in hot liquids. Since the preliminary report on this drug by Emil Fischer and v. Mering a considerable literature has already accumulated, in which attention is particularly drawn to its freedom from by-effects, the promptness and reliability of its action, and the normal character of the sleep produced. There can be no doubt that veronal marks the most important recent advance in the production of hypnotic agents, as is shown by the enthusiasm with which it has been taken up by some of the most eminent authorities. Its main indication is in the large field of simple insomnia, although it has been found of service in sleeplessness of nervous affections if not associated with marked excitement or pain. Professor Bartholow states that in many respects veronal resembles trional, and that it may be advantageously combined with the latter on the ground that they are logical allies and are capable of producing better results together than either used alone. The proportion recommended by him is two of veronal to one of trional.

While it might seem from the foregoing list of hypnotics that chemistry has amply provided remedies of this kind, this is not actually the case, since only comparatively few have been found worthy of a permanent place in the materia medica. Furthermore, it must be remembered that insomnia is of such varied origin that a hypnotic which succeeds in one case may utterly fail in another, and for this reason alone it is well to have a large number of efficient drugs of this kind from which to make a selection. This is especially true in the chronic forms of sleeplessness, in which it is frequently necessary to alternate the hypnotics in order to avoid habituation or the possibility of untoward effects. As already mentioned, the combination of two hypnotics sometimes acts more satisfactorily than the single administration of either alone, the one supplementing the action of the other.

It is problematical whether the long sought ideal hypnotic will ever be discovered, but in the meantime good progress is being made in the evolution of safe, efficient, and reliable drugs for the relief of the varied forms of insomnia which constitute so large a province in the practice of medicine.

SPLINT FOR FRACTURE OF FEMUR IN A CHILD.

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In view of the many splints described for the treatment of fractures of the femur it would seem superfluous to add another, but I have had such satisfaction in the use of the one described in this paper that I will risk presenting it to the profession at large, feeling that those who try it

will be pleased with it. It is especially adapted to children on account of the difficulty often experienced in controlling restlessness and securing the necessary coöperation of the patients in these cases.

The splint consists of three pieces—a

Splint for fracture of the femur in a child.

body, a thigh, and a leg piece. For a child five years old a board one-half inch thick and three or four inches wide is sufficient. Of course the body piece should be wider than the leg piece.

Measurements.—For the body piece measure from the axilla to the upper part of the great trochanter, which we will take to mark the hip-joint. For the thigh piece measure on the sound side from the trochanter to one or two inches (determined by the size of the patient) beyond the knee-joint. For the leg piece measure from the knee to the side of the foot below the ankle.

To Make the Splint.—For the body piece take a board of a size indicated above and cut a smooth round notch in one end, to fit up against the axilla, with horns to extend one above the other below the shoulder. Measure from this notch the distance already found from axilla to trochanter and bore a hole for a three-sixteenth-inch stove bolt. Cut the board off about 1½ inches below this hole. For the thigh piece, take a board somewhat longer than the measurement for that piece and bore a hole near each end, the distance between the holes corresponding with the thigh measurement. Cut each end about 1½ inches beyond the hole. For the leg piece, bore a hole near one end of a board as before and cut the other end off to correspond with the leg measurement. For neatness, round off all corners.

An auxiliary piece to hold the splint from rolling or slipping is of great value. For this, take a piece of galvanized iron or other similar material of a length sufficient to go about two-thirds around the body, and of a width equal to about two-thirds of the body measurement. Cover it with good strong muslin, allowing the ends to project beyond the metal sufficient to complete the distance around the body, and pin together. Bend the piece so that it will fit around the back of the patient. Fasten one end to the body piece with small wood-screws, or in any other convenient way, as near as possible to the lower end, place it in position over the back with the body piece in place, and further adjust until both fit properly. Remove it, bolt the three pieces together as indicated by the holes, using large washers in order to give sufficient support to the wood to make the joints rigid. Flex the pieces upon each other at the desired angle, which will be from 50 to 80 degrees, and tighten the bolts until the joints are rigid.

To Apply.—Pad the splint. Place the auxiliary piece around the back with the body piece in place at the side. Lay the patient on the back with the splint in place and secure it by pinning the muslin bandage tightly over the body. Flex the thigh and leg in line with the splint and make traction at the knee while manipulating the injured part until it is in proper position. Fasten the end of a roller bandage to the end of the leg piece at the ankle and bandage securely, but not too tight, to the knee, all the time making traction at that point. Bandage more securely at the knee, and continue the bandage up the thigh to the body and fasten. Smooth everything nicely and block up under the knees with a small pillow, or better, a cigar-box, with a small salt bag filled with bran, so that the patient will lie easily and comfortably. If the nature of the injury requires abduction, make the thigh piece out of a thicker board and bevel the upper end. Traction is maintained by the extra length of the thigh piece. If it is desirable to apply Buck's extension it may be done by loosening the bolts, carefully straightening out the splint and limb together, and applying it according to established rules. For calls of nature, bathing, dressing, etc., the nurse can carry or move the patient around with perfect ease and security by placing one arm under the knees and the other under the back, always in such cases being careful to observe that the joints are rigid.

Among the points to which especial attention might be called are:

1. The simplicity of this apparatus.
2. The ease with which it is applied and the help it affords the operator while adjusting the fracture.
3. Its adjustability, which allows changes in the position of the limb and joints while still holding the fracture secure.
4. It allows more movement in a restless child, with comparative safety, than any other splint of which I know.
5. The ease with which the nurse can manage the patient for hygienic purposes.

TUBERCULOSIS AND THE ROENTGEN RAY.

By Wm. S. Newcomet, M.D.,
Philadelphia.

The use of the *x*-ray in tuberculous affections may be considered from two different standpoints: the first from its employment in diagnosis; and secondly, its value in therapeutics. Both have by some enthusiasts been much overrated, but the medical profession in general have little conception of their scope.

In regard to the value of the rays in diagnosis in certain fields, such as bone and joint diseases, the profession at large seem to have a fair conception as to their limitations, and most of us are familiar with the radiographs that show with considerable accuracy the amount of damage done by the disease. Scarcely an operation of this character is performed without a previous *x*-ray examination, which acts as a guide to the operator, more or less, and in some instances shows processes that would otherwise be overlooked.

Considerable progress has been made lately in the examination of the chest by what might be called instantaneous radiography, and by this means we can verify the results made by other methods. The use of the fluoroscope, however, would be the ideal method to view the chest, for by this means we are able to see the conditions as they exist, under inspiration and expiration or at rest, and from all positions; you are able to see just what you hear in your stethoscope; you see jerky breathing, pus in cavities, or the dark spots of consolidation, etc. But unfortunately the use of this method inflicts considerable punishment upon the observer, and those who have pursued very much work in this line often suffer from severe burns in consequence. Almost any novice is able to outline the gross pathologic changes in the lung structure, but it requires considerable practice to notice the minor ones. Therefore, on account of the danger to the operator while making these examinations the development of the radiograph by certain standards is being carefully studied by some, but usually the radiograph of the chest is very much like a photograph of some pathologic specimen; although it is not open to the objection of distorted imagination, as claimed by some for examinations made by the fluoroscope.

One strong point in favor of the *x*-ray examination of the chest is that it will exactly localize a certain lesion; this is not always possible by the ordinary methods of percussion and auscultation, as it is well known that the tension of the tissues will often transmit sounds contrary to the direction that they would take under ordinary circumstances.

Regarding the use of the *x*-ray for diagnostic purposes, it might be said in a general way that wherever the diseased condition differs in density from the surrounding normal structures, that process should show by the methods under consideration.

The results obtained by the use of the *x*-ray in the treatment of the localized processes of tuberculosis are rather variable but depend largely upon surrounding conditions, and from the clinical observation of a number of cases the following deductions might be drawn: When the ulceration is not caused by some mechanical irritation, such as necrosed bone, pockets of pus, or the constant movement of fascia, the *x*-ray will usually prove beneficial; and in suitable cases of enlarged tuberculous glands, that have not passed to the stage where they have broken down, if the *x*-ray is carefully applied they will be absorbed to a great extent, but it is doubtful if they will wholly disappear, or be restored to their normal condition.

The cases in this paper were a series in which the *x*-ray was the only agent employed. This course, however, is not to

be recommended, as it was only adopted with the idea of deriving an unbiased opinion as to its effects, and while in several instances the results were quite startling, it is by no means a specific or general panacea, and should under all circumstances be used with the greatest caution and only in favorable cases.

Although we have had very encouraging results in most tuberculous conditions, in its commonest and most fatal form, that of the chest, the results have been entirely negative. Perhaps the technique used was not perfect, but unfortunately the conditions as they are presented in these cases are not ideal for this form of treatment; and if in the future the *x*-ray should be found to be of any value in chest diseases, it will be only in the early cases, for after the lung conditions have broken down the mechanical opposition to healing will no doubt far outdo any good the *x*-ray might by chance relieve.

If we are not able to benefit the tuberculous processes of the chest we have found that it will relieve a most distressing complication, the ulceration of the larynx. About a year ago a series of three cases were treated in coöperation with Dr. Off. In one the lung symptoms were so far advanced that it was deemed inexpedient to continue treatment after the first exposure. In the other two, inside of two weeks there was a complete disappearance of pain and dysphagia, but as there was considerable destruction of tissue in the surrounding parts the treatment had no effect upon the voice. One of these patients, who had formerly been under the care of Dr. Freeman, had very little lung involvement, and when last seen by Dr. Off the laryngeal condition appeared to be perfectly healthy. The other unfortunate has since succumbed to his lung condition. The treatment of these cases is rather tedious; they received thirty-nine and thirty-five exposures respectively, during the months of March, April, May, and June, each being from five to ten minutes' duration, and during the last two months the chest of the latter was also exposed, with no appreciable effect. The laryngeal exposures were made externally upon the neck; the only ill effect was the loss of hair and a tanning of the skin.

The operation upon cases of cervical adenitis is unfortunately often followed by a long period of ulcerating sinuses which are always difficult to treat, and a short history of the following cases will serve to illustrate the effects of the *x*-ray treatment upon this class:

H. B., eleven years old. Two months previously he had undergone an operation for the removal of a large mass of glands on the left side of the neck, which left a large open wound. The boy was difficult to manage, but received twelve treatments, when they were discontinued. No apparent result followed.

J. D., eighteen years old; female. One exposure; no result.

J. O'C., male, fifteen years of age. In the early part of 1900 he developed an enlarged gland under the angle of the left jaw. As there was no apparent benefit from local applications it was decided to remove it by operation. A few months later another mass formed about one inch below the site of the former, which at that time was still discharging. About November, 1902, the second mass was removed, and this one also formed a sinus, although the other one closed to some extent after the second gland was removed. This condition continued until 1903, when the *x*-rays were applied, and by September both sinuses had closed. In December one of the scars broke down, but two applications of nitrate of silver has again closed them.

Maggie M., sixteen years old, tall, thin, and poorly nourished. In the fall of 1901 she had undergone a most radical operation for the removal of the glands on both sides of the neck. On the right side there was a large N-shaped scar, the total length of which was nine inches, while on the left side it was V-shaped and measured seven inches. About four inches of the scar on the right side and three on the left side were ulcerated, at the infraclavicular notch, and two other places on the left were ulcerated sinuses. From January 16 to February 25, 1903, twelve *x*-ray treatments of ten minutes each were given, which was followed by healing of all the sinuses. In May she again returned with a large abscess in the left axilla, and the old sinus at the infraclavicular notch was also open.

K. H., female, twenty-three years of age. In August of 1902 a radical operation for the removal of a number of

enlarged cervical glands. For two years previously she had suffered from a number of abscesses about the face and neck; and in December of 1902 she still had a number of discharging sinuses on both sides of the neck. In this case twelve treatments were given, and since that time the local condition has remained healed.

Of the four other cases of this series, two were not treated, as the glands were soft and fluctuating, with no open sinus; another, a case of tuberculous ulceration of the ankle-joint, was treated with no result, and subsequent operation showed an extensive necrosis of the bone. The last case was one of inflamed glands of the neck, probably tuberculous; the history is as follows:

A. M. C., female, thirty years of age. Under the angle of the jaw on the right side were two enlarged glands about the size of pigeon's eggs, while on the left side was a gland about the size of a hen's egg. Treatment began on May 15 on the left side, and was continued until the middle of June, when the other side was exposed and treatment continued until the middle of August. Fifteen treatments of ten minutes each were given to each side. The improvement was quite marked, and at present the glands are scarcely larger than hazelnuts.

In conclusion it might be said that in suitable cases the use of the *x*-ray will prove a valuable adjunct to their treatment, and when it is employed should always be in coöperation with proper hygiene and other standard remedies.

THE ADULTERATION OF COD-LIVER OIL.

The *Lancet* of February 6, 1904, states that it is indebted to Mr. E. J. Parry, B.Sc, F.I.C., for a communication in which he states that the great scarcity of cod-liver oil during the past year or so, accompanied by famine prices on the market, has been responsible for an enormous amount of adulteration in this product. Various adulterants have from time to time been recorded, but at the present time "low-grade" fish oils other than the genuine cod-liver oil are almost universally found in adulterated samples. There is at present, Mr. Parry states, and he is a well known authority on the subject, a very brisk demand for cod-liver oil barrels, and he has been able to trace enormous numbers in one place. The original marks are obliterated, and the barrels are repainted and remarked, and eventually three barrels of genuine cod-liver oil reappear on the market as five, and the stock of shark oil is correspondingly diminished. Such transactions he has been able to trace from beginning to end. As regards examination a trained nose is of considerable help. The tests given by the British Pharmacopœia are practically useless except in so far as they bring the adulterants within a certain group on account of a specific gravity limit, and they exclude oils which freeze at 32° F. in two hours. Again, the specific gravity, the saponification value, and the iodine absorption figure give no useful indications except when taken in conjunction with other figures. The amount of free acid present in the samples, the index of refraction, and certain color reactions do give in some cases most valuable information. Mr. Parry has found that of the fifty-eight samples examined by him during the past year, twenty-one proved to be pure, nine doubtful, and twenty-eight were clearly adulterated.

Altogether the results show that there is an enormous amount of adulterated cod-liver oil on the market, and Mr. Parry's experience is in complete agreement with that of other analysts. A large proportion of this adulterated oil is undoubtedly used in preparations of cod-liver oil, such as cod-liver oil and malt extract and emulsions. The percentage of cod-liver oil in such preparations has been found to be as low as from 7 to 9. Mr. Parry suggests that this adulteration of cod-liver oil gives an admirable opening to physicians to consider, in view of the difficulty of depending on the supplies of cod-liver oil, whether its value as a medicine is really existent in any special sense, or whether it is more or less traditional and therefore much exaggerated; or, in other words, whether it is not as a fat of animal origin that cod-liver oil enjoys a reputation which it ought to share with other animal fats. It is open to question whether cod-liver oil has any specific virtues other than those of an easily digested fat.

The Therapeutic Gazette

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Leading Articles.

THE ABUSE OF ETHER IN THE EARLY STAGES OF ITS ADMINISTRATION.

On a number of occasions we have called attention to improper methods of administering anesthetics. In the case of chloroform most physicians are so timid and fearful of its lethal properties that they use it with respect. But in the case of ether it is regarded as so innocuous that too frequently the surgeon is content to permit a novice to administer the drug, and to pay little attention to the manner in which it is administered, if only the patient is quiet during the performance of the operative procedure. The writer of this editorial is convinced that those who have administered ether in his presence rank as high as any other class of anesthetizers that employ this drug, yet in many cases the ether has been undoubtedly abused during the early stages of its employment.

The fact cannot be too strongly emphasized that the influence of ether is not alone exercised during the period in which the patient is actually anesthetic. As a matter of fact its effects continue for a number of hours after the patient has returned to consciousness, and not rarely last for days and even for weeks. These effects, it is true, cannot be considered as directly due to ether, but they are due in considerable degree to the hurtful manner in which the drug has been administered.

It is both amusing and pathetic to notice the mental attitude of the physician who finds himself about to be the victim of the surgeon's knife, and no one is more strenuous in demanding that the anesthetic shall be given carefully than he.

The moral of this editorial note can best be pointed out by a recent incident in the writer's experience. A nervous child of four years, about to be operated upon for enlarged adenoids and tonsils, was taken in charge by one who is considered a very skilled anesthetizer, and placed upon the operating table without any manifestation of fear on the patient's part, the child being too young to appreciate his surroundings. The anesthetizer, after having poured the ether upon an Allis inhaler, placed it directly against the patient's face, with the result that in an instant the child changed from a contented, smiling patient to a frightened, screaming, and anxious child. Not only was the child frightened by the inhaler being placed over his face, but the sudden rush of ether vapor overwhelmed him and caused spasm of his respiratory muscles. The ether inhaler was removed by another physician, who then held it above the child's face in such a way that the ether vapor gradually sank until it reached the child's respiratory passages, which speedily caused the child to pass under the influence of the anesthetic without any nervous shock, without any cyanosis, and in peace and comfort. Suggestion as to toys of which the child was fond gave him pleasant dreams as he sank into unconsciousness, instead of dreams of terror produced by the too hasty application of the ether.

There are two classes of physicians who will recognize the importance of this editorial note. One class is composed of those physicians who have within recent years taken ether and have had the disagreeable suffocative sensations produced

by its early inhalation. The other class is composed of those physicians who are well enough trained to recognize the symptoms of nervous shock for days and weeks after operative procedures. It is the constant experience of the writer that adults and children often require prolonged treatment in order to obtain perfect health after an operation, and we are convinced that if the ether was administred with more care these manifestations of nervous shock would be greatly diminished. It would be an excellent thing for many patients if the professional and temporary anesthetizer was required to take ether before an operation for the purpose of impressing upon him the sensations which are felt by those who have to take it in order that surgical procedures may be carried out.

THE INTRASPINAL INJECTION OF TETANUS ANTITOXIN.

On previous occasions we have pointed out in the editorial columns of the THERAPEUTIC GAZETTE that some of the statistics which have been published in regard to the value of antitetanic serum in tetanus were not to be relied upon because the reporter had not separated his cases of acute and subacute tetanus. In the acute cases the mortality is about twice as great as in the subacute or chronic cases, and therefore the use of antitoxin in one set of cases might give results which seemed exceedingly good; whereas its employment in another class of cases might produce results so bad as to almost condemn its use. Again, it must be remembered that the great difficulty in the employment of tetanus antitoxin lies in the fact that the symptoms of tetanus are not developed until a considerable period of time has elapsed after inoculation. During this period the tetanus bacilli have rapidly multiplied, and the onset of the symptoms is a sign that the poison which they have formed has already attacked the nervous protoplasm. Furthermore, it has been found that this tetanus antitoxin unites so closely with nerve cells that it is practically impossible to dislodge it, and that once having been so united it speedily exercises its destructive influences. It follows, therefore, in the majority of cases, that by the time the antitetanic serum is given the damage is done and is irreparable. In the hope that some time might be saved, it has been suggested that the patient be trephined, and the tetanus antitoxin be injected into the brain. More recently it has been suggested that intraspinal injections of antitoxin shall be resorted to.

In the London *Lancet* of March 5, 1904, Wallace and Sargent, who are attached to the staff of St. Thomas's Hospital, report four cases of acute tetanus which they have treated by the injection of antitoxin into the spinal theca. In one of these cases the injury had occurred seventeen days before admission, and the tetanic symptoms had begun nine days after the injury. The patient was discharged well on the twenty-fourth day after her admission. In the second case the symptoms began eleven days after injury, and the patient was discharged on the twenty-eighth day cured. In the third case, in which from three to six days elapsed before the development of the symptoms, a severe general convulsive attack occurred; recovery ultimately took place, and the stiffness entirely disappeared after the forty-second day. The fourth case was injured six days before he presented himself for treatment, was evidently severely infected, and died within a few hours of his admission to the hospital. The recovery of three out of four cases cannot be considered as of great statistical value, and we doubt very much whether this method of administering the antitoxin deserves the entire credit for the recovery of the three individuals who seemed to benefit from its use. Wallace and Sargent quote Penna as having had five cases treated in this manner with three recoveries.

While it is true that the intraspinal injection of the antitoxin does bring it in immediate contact with those portions of the nervous system which are chiefly involved in this infection, it is also to be remembered that even this rapid method of employing the remedy brings it in contact with the nerve cells a considerable time after they have united with the poison. It would seem, however, that the intraspinal has something in its favor as compared to the intracerebral method, for the latter requires trephining, and it is upon the spinal cord rather than upon the brain that the tetanus toxin seems to expend its chief energy.

ANOTHER USE OF ADRENALIN.

Adrenalin has already proved itself a remedy of such extraordinary power in a number of conditions over which we had little control before it was introduced into the materia medica, that the medical journals of the past few years have been filled with reports indicating the conditions and the methods in which it may be used to bring about the best results. As with all new remedies it has been tried in some conditions and found wanting, because its physiological action was not indicated by the pathological condition which was present. On the other hand, in a very large number of conditions it has proved a remedy of very extraordinary power, and it has undoubtedly reached a point in its history which guarantees its employment as a reliable remedy for many years to come. Further than this it is probable that additional conditions will be found in which it can be employed with advantage. In the *British Medical Journal* of March 19, 1904, Dr. James Barr, of Liverpool, who has been an active clinician for many years, publishes a clinical lecture in which he speaks in the most eulogistic terms of the employment of adrenalin in a condition in which we have not heard of its employment hitherto, namely, its injection into serous cavities, when those serous cavities have been filled with effusion, with the object of preventing a reaccumulation of the liquid. Thus, in a case of abdominal carcinoma with secondary involvement of the right pleura and pleural effusion which had been tapped again and again, he obtained excellent results from injecting one drachm of the 1:1000 solution of adrenalin chloride into the pleural cavity. He states that there was no further outpouring of fluid, that no further tapping was required, and that the old lady passed the remainder of her life in comparative comfort, although of course the underlying condition was incurable. He also recommends the same line of treatment in cases of ascites due to hepatic cirrhosis. It is hard to see exactly how the drug can do much good in this condition when injected into the peritoneal cavity, as one would suppose that its action would be too fleeting to produce any permanent effect. In one of his cases of peritoneal effusion, after withdrawing the liquid he injected two drachms of adrenalin chloride solution with some aseptic air without the production of any symptoms which were in any way evil in their character. Further, Dr. Barr asserts that he has employed it with success not only in peritoneal effusions, but in cases of pericarditis with effusion.

PREVENTION OF THE SPREAD OF VENEREAL DISEASES.

Since practically all venereal diseases are incident to prostitution, the first step in their prevention must necessarily be taken in the direction of either regulating or entirely suppressing harlotry. The entire history of efforts of suppression seems to prove conclusively that such, even when proposed with all sincerity, and enforced with apparently adequate power, are wholly unavailing.

The testimony in regard to the efficiency of efforts at regulation, having for their end the legalizing of prostitution, with registration of the women pursuing this trade, and frequent medical inspection, is extremely conflicting. The experience of Paris is certainly not encouraging, even from a purely sanitary standpoint. In Cincinnati the Board of Health exercises control over every prostitute, requiring registration, periodical examination, police oversight, and compulsory hospital treatment or workhouse sentence. Heidingsfeld (*Journal of the American Medical Association,* Jan. 30, 1904) states that all these regulative measures have been carefully thought out and rigidly enforced, but that he has failed to note any beneficial effects. He believes that venereal disease is as frequent and that it exists in as grave a form as was the case prior to preventive measures, and he notes a larger number of clinical venereal cases tracing their origin to non-control clandestine prostitutes. In regard to private practice during the years of control there has been a progressive increase of the number of venereal cases as contrasted with those suffering from dermatological affections. It is surprising, moreover, the largeness of the number of venereal cases that can be traced to control prostitutes, although most of the cases, even in private practice, are contracted outside its pale.

This observer states that if the system

were simply ineffective and powerless to show results, he would not criticize it unfavorably, but he is assured that its influence in other directions is pernicious and that it effects material harm. Thus control, with periodical examinations, gives the laity a false sense of security. A certificate, issued in diploma-like form, must be exhibited conspicuously in the room occupied by the person to whom such a certificate is issued. The issuance of such a certificate is pure deception and fraud, as is evident from the innumerable infections which can be traced to the possessors. Heidingsfeld states that 87 cases occurred in his own practice in seven months. It is generally stated that from one-half to one-third of the prostitutes, even in control cities, are constantly infected with gonorrhea, and that eighty per cent of them are infected with syphilis during the first year in that life. If this be true, Heidingsfeld holds it criminal to grant to this highly contagious class of individuals a certificate reading, "We have made a careful examination of said —— and find her free from any venereal or contagious disease." The power exercised, also, over the unfortunate prostitutes creates opportunities for blackmail, and tends to materially diminish the number of controls and to increase the more numerous and more dangerous clandestines.

Heidingsfeld, whilst rejecting suppression as impossible and control as impracticable, makes a number of useful suggestions, having for their end the prevention of the spread of venereal disease. First and foremost he considers a thorough education of the youth essential, and would make it an integral part of their general school life, showing them the dangers which attend improper relations; and that abstinence and continence are compatible with general health and well-being. Next is suggested a vigorous suppression of abortionists. Other measures considered serviceable are systematic investigation into the self-supporting character of female industrial life, with the assurance of remuneration commensurate with proper living and being, and the enactment of legislation for the salutary segregation of public and clandestine prostitutes, and its enforcement within bounds of propriety, justice, and reason. Heidingsfeld would abolish common drinking cups and utensils, and promote education along the lines of prophylaxis in regard to the dangerously unclean dental, manicure, chiropodist, and surgical instruments, and of the prolonged infectious character of venereal diseases.

Public opinion in most of our communities is unalterably opposed to legal recognition of prostitutes, and hence would not tolerate measures for regulation; but since it has been abundantly shown that venereal diseases are responsible for as much crippling and death as tuberculosis, all measures which have for their end the lessening of the spread of these diseases are to be considered. Although evidence has been advanced on both sides of this question, regulation is, to say the least, inefficient. Perhaps the most potent means of lessening the evil lies in the line of education. Next after that, the enforcement of strict police regulations to prevent street solicitation. This is practicable, and would have for its end the protection of those least able to care for themselves. Finally, segregation of harlots in a more or less inaccessible part of the city would seem to be not only possible, but an end which could have none but good effects.

INFECTIOUS OSTEOMYELITIS.

This affection, due to infection of the bone-marrow by pyogenic organisms, usually the staphylococcus pyogenes aureus, and as a rule secondary to suppurative lesions elsewhere in the body, such as a furuncle or carbuncle, is predisposed to by fatigue, exposure to wet or cold, contusions, or an attack of infectious disease, such as measles, scarlet fever, pneumonia, or typhoid fever. The inflammation nearly always begins in the diaphysis of the long bones, as a rule in those of children or adolescents. The femur and tibia are the bones commonly attacked. Next in order comes the humerus, though no bone is really exempt. The primary infection is always in the bone-marrow; the bony trabeculæ and the cortex are destroyed only secondarily. The infection usually extends quite early through the dense cortical bone, and produces a subperiosteal abscess. It is checked by an epiphyseal line; exceptionally it may extend through

the epiphyseal line to the joint, or there may be destruction of the epiphyseal line and a separation of shaft and femur—*i.e.*, a spontaneous fracture. If the periosteum is separated from the cortex about its entire circumference, necrosis of the entire cortical circumference, at least in its superficial layers, may occur. If internally the entire circumference of the endosteum is destroyed, the entire inner circumference of the cortex may become necrotic.

The affection is characterized by sudden pain, rapidly becoming extremely severe, greatly aggravated by percussion or pressure. Swelling of the soft parts develops early, as evinced by pitting on pressure. Constitutional symptoms are pronounced from the first. Exceptionally the affection begins with moderate pain, and is accompanied by swelling of adjacent joints, thus diverting attention from the real focus of infection. This inflammation must be distinguished from acute tuberculosis and the various forms of rheumatism. Tuberculosis nearly always begins in the epiphyses of the long bones, whilst rheumatism attacks, as a rule, the joints.

The treatment demands an early and adequate drainage. This necessarily implies the removal of a good-sized button of bone. Nichols (*Journal of the American Medical Association,* Feb. 13, 1904) advises that this should not be less than one-half inch in diameter, and if pus escapes he believes that the hole should be enlarged along the shaft with rongeur forceps and chisel as long as pus can be found in the marrow. In early cases a layer of cortical bone one-half inch or more wide and two or three inches long may suffice. In advanced cases a lid of bone should be removed from the entire length of the shaft.

Since the integrity of the endosteum is essential for the vitality of the inner layer of the cortex, curettage of the marrow is contraindicated.

In the subacute stage, with necrotic shaft, and proliferation of the periosteum, the sequestra should be removed early. Indeed, Nichols states that the chief object of his admirable paper is to emphasize and illustrate the fact that by early removal of such sequestra at a secondary operation, and by approximation of the inner surfaces of the proliferating, partly ossified periosteum, a new shaft of periosteal bone will be produced with constant regularity, which joins the epiphyses or whatever portion of the sound shaft is left, occupies the position of the original shaft, and heals without sequestra or sinuses, giving perfect functional results.

The time for the removal of the sequestra is not during the very acute stage, since the periosteum is then thin and difficult to manipulate. About the eighth or tenth week, after drainage of acute infection, the periosteal proliferation and ossification have advanced to such a stage as to make certain the bone-forming ability of the membrane, and to make it sufficiently rigid to allow of accurate manipulations, without ossification being so advanced as to produce a rigid, non-plastic bony tube.

The presence of well marked ossification can be accurately determined by the removal and examination of small bits of the periosteum from the edge of a sinus. A rough test is offered by thrusting a needle through the periosteum at the edge of a sinus. If new periosteal bone has been formed, the needle passes through the soft tissue, then through a crackling, thin layer of delicate bone, and brings up against the dense shell of the necrotic shaft. When this thin, crackling periosteal layer is felt, the periosteum is at the best stage for the performance of the operation. After one or two weeks of careful disinfection the necrotic shaft is exposed by an incision passing through the sinus, if practicable. The periosteum is stripped up, care being taken not to puncture it.

Infiltrated tissues are disinfected with a 95-per-cent carbolic solution, applied for a few seconds, and followed by swabbing with alcohol. The periosteum is then folded together in such a way as to make a flattened riband or tape, approximating inner surface to inner surface. The edges of this riband are secured to each other by chromic catgut. The sinuses of the soft tissue are curetted and trimmed, and the incision of the soft parts is closed by animal sutures, a plaster-of-Paris bandage completing the dressing. Drainage is secured by small gauze wicks, and the suturing is not very close. On the second or third day there is usually some evidence of septic absorption. Healing by first intention is, of course, exceptional. A sinus commonly develops for a time, usually

near the epiphyses or at the junction of the periosteum and shaft. The first dressing is performed usually on the third day.

Nichols reports many instructive cases showing the admirable functional results to be obtained by the treatment he outlines.

Reports on Therapeutic Progress

THE TREATMENT OF MUCOMEMBRANOUS ENTEROCOLITIS.

EWALD in an article in *American Medicine* of February 13, 1904, states that in the therapy of this state we have the following problems to solve:

1. The intestines must be emptied without the use of strong, and especially without saline, agents.

2. The pain should be overcome without the use of narcotics.

3. The sequels of the obstipation—*i.e.*, gas formation, dyspeptic symptoms, and autointoxication—must be obviated.

To accomplish these things a great many methods may be employed, but especially recommended are vegetable laxatives, such as senna, castor oil, flaxseed, etc., and proper regulation of the diet. Laxatives are objectionable because they must be given in increasing doses, and are not then followed by a cure. Injections of oil, as recommeded by Kussmaul, are specially valuable and are given as follows: 300 to 500 cubic centimeters of slightly warmed linseed, olive, or sesame oil is injected high into the rectum by means of a soft-rubber tube (not a hard-rubber cannula) while the patient lies on the left side. The injection should be made slowly, the patient remaining on the left side for about ten minutes, and the enema should be retained as long as possible. It is only after this means has failed to produce a good movement that catharsis should be resorted to and some aperient mineral water be given.

Diet in all these cases plays a very important part in the treatment. When we remember that this state is most frequently associated with obstipation, it is evident that food having some cathartic action is desirable. Remembering also that some patients are not constipated, it is easy to see that a fixed diet will not suit all instances. If the trouble is characterized by obstipation which is due to a simple intestinal inactivity or primary weakness of the intestinal muscles, or secondary hysteric or neurasthenic disturbances of innervation, the diet would naturally be different from that in a case in which the disturbance was due to some mechanical hindrance, as from the uterus or adnexa.

Recommended as specially efficacious when simple constipation is present are the coarse breads, as black bread, Graham bread, and rye bread; fats, as butter, cream, or lard; salads with oil, fatty sauces, gravies; coarse vegetables of the cabbage family; curded milk with plenty of sugar; fruit juices, figs, syrup, jams, prunes, stewed fruits; and fresh vegetables of all kinds. If taken in the morning on an empty stomach, the following are frequently of value: Strawberries, raspberries, currants with milk or cream, or gooseberries, oranges, melons, grapefruit, and apples. This diet acts not so much through the mechanical irritation of the coarse flour and seeds contained in it, as through the formation of gases and acids, which stimulate peristalsis.

Most of these dietetic measures are known to the laity, and especially to the patients themselves, who have for a long time tried various foods and remedies for their trouble. The success of such a diet depends upon the exactness with which it is followed, for it can be hindered by the eating of various constipating foods, and such things naturally should be prohibited.

Such a regimen may be either gradually or immediately instituted. It happens unfortunately, according to the experience of the writer, that with such dietetic measures alone the results are not satisfactory, and that other means must be used in order to bring about the desired cure. For this purpose, besides the diet recommended, it is well to employ some of the following measures: Mineral waters, massage, electricity, room gymnastics, or some of the various cold water treatments, especially the Scotch or alternating hot and cold douches. It is self-evident that such a diet is not practical in all cases, particularly those in which the action of the stomach is disturbed

through food digested with difficulty. The patients with spastic constipation are also made worse by such coarse diet. When a spastic constipation exists and its nature is understood, opium and belladonna internally, or in combination as suppositories, employed along with injections of oil, work very well. When these measures, plus a coarse diet, produce a cure in a case with spastic constipation, it is in spite of the diet and not because of it.

It is only rational that in these last named cases a mild, non-irritating diet should be instituted, which through its non-irritating qualities produces a laxative effect. This diet may be followed whenever constipation does not exist—a so-called lactovegetable or even constipating diet. The following diet scheme recommends itself for this purpose: Breakfast: sweet milk, cocoa, oatmeal with cocoa, white or dark bread, with honey, jam, or fresh fruit. Dinner (preferably at midday): vegetables or fruit, as apples, plums, blueberries, raspberries, cherries, a broth or vegetable soup, spinach, tomato, or beet soup, a milk soup or curded milk, butter, and a liberal amount of fresh vegetables are desirable, or pea, rice, or lentil soup, stewed vegetables with dumpling, macaroni, puddings, blanc mange with fruit juices, etc.; salads, and eggs variously prepared, bread with butter, and a light cheese. Supper: a thick soup made with barley, rice, tapioca, etc., baked potatoes, eggs, bread, butter, cheese, milk, etc.

According to the needs of the patient the foregoing diet will be more or less carefully followed, and on certain days a small amount of meat may be allowed by way of variety.

While this diet is directed especially against the local intestinal condition, still it serves well to support and improve the general nutrition, because of the high percentage of the carbohydrates and fats, which is very important. These are of special value in instances in which women have had repeated pregnancies, and as a consequence have pendulous abdomens with low-hanging intestines, in which the feces tend to stagnate. Through improved nutrition it frequently happens that the abdomen takes on fat, making the walls more firm, and consequently raising the intestines somewhat, thus indirectly relieving the constipation. In the cases not complicated by costiveness the results of dietetic treatment are not marked. However, through better nourishment the hysteria and neurasthenia are directly benefited.

FACIAL PARALYSIS.

In *American Medicine* of February 13, 1904, WILSON in writing on this subject asks the question: After a diagnosis has been made and the lesion located, what should be done for the patient?

We must remember that electric changes soon develop in paralyzed muscles. The reaction of degeneration, partial or complete, appears in four or five days after the paralysis occurs, and according to Starr the electric contractility in the facial muscles is usually altered. In some cases the faradic contractility is preserved and the galvanic contractility is slightly increased, so that the muscles respond to a weaker current than those upon the normal side. In these cases recovery occurs within three or four weeks.

In cases of medium severity, however, there is a partial reaction of degeneration. The faradic contractile is very much diminished or even lost, while the galvanic contractile is heightened, so that only a weak current is necessary to produce contractility. In severe and permanent cases there is a total reaction of degeneration, a complete loss of faradic contractility, and a gradual reduction in the galvanic contractility.

One can readily see how important are the electric reactions, not only as symptoms, but as prognostic indications.

Electricity should not be applied, therefore, until the end of the third week, except to ascertain the excitability of the muscles. One month after the paralysis has occurred electricity and massage should be used, regularly and systematically. If the muscles respond to faradism, that current should be used. If they do not respond to the induced current, galvanism should be used, and should be used only with the galvanometer, so that the strength of the current may be known and gradually increased, if necessary.

Flannel wrung out of hot water, or the hot-water bag, applied to the side of the

face for the first four days does something toward relieving the stiffness of the muscles and dilating the vessels, thus favoring the process of degeneration and regeneration. Blisters over the mastoid do more harm than good, except for their mental effect.

We must endeavor to ascertain the cause of the palsy, and if due to ear trouble, remove the cause. If syphilis is suspected, potassium iodide and mercury should be given in full doses.

The eye must be protected by hanging a patch over it, or by the wearing of colored glasses. It must be kept clean by washing with a solution of boric acid. Internal medication is of little or no value.

TREATMENT OF PNEUMONIA.

ROCHESTER states in the *Medical News* of February 13, 1904, that in the treatment of pneumonia our first indication in treatment, the relief of toxemia, may be met by induced sweats and mild catharsis. The mild catharsis is best produced by the administration of calomel at the onset of the disease, to be followed by the use of a saturated solution of Epsom salts in moderate dose daily. The calomel dose may be repeated occasionally as the indications arise. The sweating is best and most easily induced, not by the administration of drugs, but by the hot mustard foot-bath, given in bed with no disturbance of the patient. As much depends upon the proper method of giving this bath, and as the writer has seen failures through lack of this knowledge, he thus describes the procedure in detail:

The patient, in a nude condition, lies between blankets with his knees flexed, his feet in the tub, which has been introduced under the upper blanket, the long axis in the line of the patient's body and legs; another blanket passes from under the tub up over the end and over the knees of the patient; two to five blankets, or a fewer number of blankets and a rubber sheet, are then placed over the patient extending from the neck over the foot of the bed, and tucked in around the foot-tub and side of the patient. The tub at first is half filled with hot water, in which a heaping teaspoonful of mustard has been dissolved—from time to time during the bath more hot water is added, care being taken that the water is poured against the side of the tub and stirred in by the hand of the nurse, in order to avoid burning the patient's feet. The bath is kept up from thirty to forty-five minutes, according to the amount of sweating produced. During the administration of the bath cloths wrung out of ice water are kept constantly on the head of the patient. This sweating, in connection with the stimulation to be referred to later, is in the opinion of the writer the most important of the general therapeutic measures.

Another measure of value in preventing further bacterial invasion is the frequent and thorough cleansing of the mouth with a mild antiseptic solution. This is a measure of considerable importance, as we know the pneumococcus is present in the mouth in considerable numbers.

While attempting to get rid of toxins by these means, it is important to put and keep the patient in the best possible condition to resist and overcome the toxemia that is present. For this purpose care should be exercised in the selection of a proper diet. This should be fluid, and so far as possible should be sterile, so that no new poisons may be introduced. A large amount of pure water should be administered, so that there may be plenty of fluid to flush the excretory organs. It is best administered in small amounts at short intervals.

Moreover the patient should be placed in the best ventilated room possible to secure, and one to which there is free access of direct sunlight. The free catharsis and profuse sweating, besides aiding in elimination of toxins, tend to dilate the capillaries, thus relieving the arterial tension and getting rid of the capillary resistance to the onflow of the blood, making the work of the heart easier. One of the serious dangers we have seen is overdistention of the right heart. This can often be prevented by careful study of the lung condition as well as the state of the heart itself, and the prompt institution of the procedure indicated. A careful physical examination of the chest should be made by the physician at every visit. In this way he can tell when congestion is beginning in any part; and vigorous local treatment will in many cases prevent the further progress

of the morbid process. As soon as a portion of the lung is shown by physical examination to be in a state of beginning congestion, the prompt and thorough application of leeches, wet cups, or dry cups over the part will often stay the process there; or if it does not stop it entirely, will delay its progress twenty-four or forty-eight hours, and give an opportunity for the clearing up of any previously involved portion of the lung. The author's preference is for leeching or wet cupping.

If dry cupping is resorted to it should be very thorough, the skin and subcutaneous tissue rising up in the cup to as great a height as possible and turning blue or purple while there. The cups should be left on for a half-hour, and the process repeated every four to six hours. The writer has seen, post mortem, the direct anatomical evidence of the local value of this procedure, when thoroughly done. During the intervals between the applications of the cups the chest should be covered with a light woolen jacket. The poultice jacket should be relegated to the dark ages.

THE TREATMENT OF DIABETES.

The *Journal of the American Medical Association* of February 20, 1904, asserts in its editorial columns that practically all mild cases of diabetes feel better when the urine is kept free from sugar. The hunger grows less, the thirst diminishes, the weariness disappears, and there are fewer nervous symptoms. Occasionally, however, a "mild" case does not do well on this treatment. If the patient begins to emaciate and to feel very tired, the amount of carbohydrate food should be increased, even if the urine does not remain entirely free from sugar, for here the general feeling of well-being on the part of the patient is the physician's best guide. Much can be done, too, to add to every patient's comfort by varying the form in which the carbohydrate is given at the different meal-times. With the aid of the tables now available, the equivalent of the starch of a given number of grains of white bread in, say, rice, potatoes, macaroni, fresh peas or green beans, or in the various forms of "diabetic bread," may be easily ascertained, and the carbohydrate food should, once the tolerance has been established, be varied as much as possible.

In the treatment of cases of the "severe" type, it is not practicable to proceed so schematically as in the treatment of cases of the "mild" type. The "severe" cases, on a diet entirely free from carbohydrates, still excrete sugar in the urine, the body being unable even to oxidize the carbohydrate moiety of the breaking-down molecules of albuminous food. But it would be a grave mistake to keep such patients for a long time on a diet entirely free from carbohydrates with the idea of reducing the sugar in the urine to a minimum. Even the normal body with a diet free from carbohydrates will begin to build acetone and aceto-acetic acid, and later beta-oxybutyric acid, and these substances will appear in the urine. Every diabetic patient placed on the rigid diet soon begins to excrete these bodies in the urine, and if acetone does not appear the physician may be sure that the rigid diet prescribed has not been adhered to. The rule, then, in severe cases is to begin with a rigid diet. If the acetonuria which comes at first disappears again, and the patient in general feels better, it may be continued; but if the acetonuria is intense and beta-oxybutyric acid begins to appear in the urine, the rigid diet should not be continued, but enough carbohydrate given to make these organic acids disappear. There seems no longer to be any doubt that the graver nervous symptoms of diabetes, including the much-dreaded diabetic coma, are directly related to the presence of organic acids in the blood; it is, therefore, much more important in the severe cases to prevent acid-intoxication than to keep the urine free from sugar.

THE TREATMENT OF PUERPERAL SEPSIS.

Dr. PETER HORROCKS in an article contributed to the *British Medical Journal* of February 13, 1904, after discussing some of the causes of this state, well says that when a case of puerperal sepsis arises, the question of how to treat it is, of course, of the highest importance. The first question which arises is, Is it a case of sapremia or of septicemia? If with pyrexia there be plenty of milk, plenty of lochia, and if the latter be offensive, it is probably sapremic.

In such a case it is much the best practice to give an anesthetic and to feel all over the interior of the uterus with the disinfected finger, to remove any piece of placenta, membrane, clot, or other decomposing matter, and to follow this up by a copious intra-uterine douche of some antiseptic, such as perchloride of mercury solution 1 in 1000, formalin solution 1 in 1000, or tincture of iodine 3ij to Oj, in any case using at least a quart, and finally washing out this strong lotion with some milder antiseptic, such as boracic acid lotion or salt and water (3ij and Oj). This washing out of the uterus should be repeated if the discharge is still foul the next day, or if the temperature remains high.

Some practitioners are content in a sapremic case just to wash out the uterus without this digital exploration, under an anesthetic, and no doubt many cases rapidly improve and get quite well with such simple treatment. But cases are met with which after all require the uterine exploration, and in which a removable mass of decomposing material is found in the uterus, and in some instances unfortunately it is only discovered post mortem.

If the milk is getting scanty or suppressed, if the lochia, too, are diminishing or suppressed and not offensive, but quite sweet, and the temperature is high, it is probably a grave case of puerperal septicemia.

In such a case, again, if seen early enough—and of course the doctor knows of the rigor and fever probably soon after they begin—the patient should be put under an anesthetic, and the interior of the uterus should be explored digitally to find out if there be any decomposing mass. Probably nothing will be found. The uterine cavity can be thoroughly syringed with the same lotion as before mentioned, though unfortunately, as a rule, without the same good result following. In such cases where there is no good effect on the temperature, it is often found to be very exhausting to the patient to continue to syringe her, and so it should not be done. Some use glycerin solution, with or without antiseptics like formalin.

The author is not at all sure that curetting the uterus is not a good plan, especially if done early, say about the fourth or fifth day of the puerperium. He has done this in several cases with good results, and recommended it as far back as 1890. Of course one gives the patient various antipyretics, such as quinine, antifebrin, antipyrin, and the like, but not one of them is a specific. [With this advice we strongly dissent, as it diminishes vital resistance and does no good.—Ed.] Some authorities recommend packing the uterine cavity with gauze wrung out in some such strongly germicidal solution as formalin 1 in 500. Webster recommends crenasol as the best antiseptic to use. It consists of pure creolin *minus* soda, and is of oily consistence, and is said to kill pathogenic organisms in two minutes.

Of antistreptococcus serum the writer has had a large experience, and in some of his cases it seems to act wonderfully well, but it so often fails that one must admit that it is unsatisfactory. Possibly before long a really reliable serum will be obtained which will enable us to snatch these unfortunate patients from grave danger.

In using the serum we give 20 cubic centimeters at a time, injected subcutaneously on the anterior surface of the body, generally the abdomen, with of course every aseptic precaution. This should be repeated so that the patient gets 60 cubic centimeters within the first twenty-four hours, and then give 20 cubic centimeters twice a day afterward. Any wounds in the parturient canal, ruptured perineum, lacerations of the vaginal wall or of the cervix uteri should be discovered and carefully washed with antiseptic lotions. Iodoform powder may be dusted on them.

With regard to the removal of the uterus by hysterectomy, vaginal or abdominal, in these cases, the writer has no experience; such a procedure would only be successful, he believes, when done quite early, and it is precisely in these cases that we cannot tell whether they will be fatal or not. Hence he does not think it is likely to become a recognized practice. The same remarks apply to opening the peritoneum and washing it out and draining it; he has only done this once, and the patient died.

There are two other questions which commonly arise and which have been frequently asked. The first one is, Should a doctor who gets a case of puerperal

septicemia continue his midwifery practice?

The answer is decidedly in the negative. So long as he is in active attendance on a septic case, so long is he dangerous to a woman in labor. Sometimes he is told, "Oh, but I am engaged to attend Mrs. B., and she would be greatly annoyed if at the last moment I failed to attend." Horrock's advice is to write to her husband and tell him you have a case of blood poisoning on hand, and that it would be highly dangerous for you to attend his wife, and that he had better have your assistant, or *locum tenens,* or your partner if you have one, or some other doctor. If you do this you will get no discredit, but just the opposite; you will be known as a careful and conscientious doctor.

Think of your own feelings if the case of septicemia you were attending died, and the other case developed it and died too. How could you say that you had not conveyed the disease?

There is, however, another alternative, and that is to give up attendance on the septic case and place it in other hands, and become aseptic in order to go on with midwifery practice.

And this leads to the second question, namely, How soon after ceasing to attend upon a puerperal septic case is it possible to resume general obstetric practice? The reply is, in about fifteen to twenty minutes—in other words, just as long as it takes to get your hands aseptic. The clothes can be covered over by means of a sterilized overall, and the hands can be made aseptic by the well recognized methods. [Here again we differ from the author.—Ed.]

Horrocks states that he has digitally explored the uterus of a woman moribund from the most virulent type of puerperal septicemia, and then within an hour or two done a Cæsarian section, mother and child doing perfectly well.

Of course as a rule a medical man would take longer than this, but it must be borne in mind that however long he takes, he must go through the same process with regard to his hands in rendering them aseptic. He must not think that a week or two away from practice will render him aseptic unless he uses the other measures also.

His clothing can be rendered aseptic by sterilization with superheated steam, but in all cases when examining or delivering a woman in labor he should have his coat off and his shirt-sleeves rolled up, and if possible should wear a sterilized overall, certainly in operations; and at other times, when he cannot obtain one, he can cover his clothes with a clean towel, and avoid touching even that.

THE TREATMENT OF CHRONIC RHEUMATISM.

To the *British Medical Journal* of February 27, 1904, Stockman, of Glasgow, contributes his views as to the treatment of chronic rheumatism.

During an acute exacerbation, when the indurations swell up and cause pain and aching, relief may be given by hot baths, massage, phenacetine, Dover's powder, sodium salicylate, the local application of methyl salicylate, and similar measures. But the relief thus afforded is only temporary, and often in a few hours, or as soon as treatment is stopped, the pains return, to continue for days, weeks, or indefinitely, and the patient remains as before, liable to renewed attacks on every exposure to cold, wet, or fatigue.

To obtain permanent cure and complete relief from the recurrent attacks, the fibrous indurations must be completely dispersed, and in all but quite recent cases this is always a more or less tedious and troublesome procedure. The only means of any special and definite value in this respect are massage and exercises, the faradic current, and the injection of solution of chromic acid into any of the fibrous indurations which are sufficiently large and defined to allow of this being done. Of the three, massage is the most efficacious.

General massage is of no use. It must be specially directed to any nodules or thickenings which can be felt. At first they are often too tender to be rubbed with much pressure, but gradually they become more callous and more fibrous, and may then be more vigorously treated. A good deal of experience and skill is required during the early treatment, but after they begin to shrink in size the knuckles and fists may be used for rubbing, and ultimately the nodules disappear. The massage should be carried out daily, ten or fifteen minutes being de-

voted to each part. To obtain satisfactory cure the dispersion of all the indurations must be complete, otherwise relapses occur and are a source of much disappointment. The length of time required to do this varies very much. Recent soft swellings may disappear in two or three weeks, but when the indurations are old and widely spread three to six or twelve months may be required.

Exercises calculated to stretch the aponeuroses and muscles involved are of value in hastening and completing the cure. A stick, dumb-bells, Indian clubs, Sandow's exerciser, may all be called into requisition to provide suitable movements.

The faradic current should be applied over each region for five to ten minutes daily. It has some effect in causing shrinkage of the swollen fibrous tissue.

The injection of chromic acid is only possible where the nodule is sharply defined and can be penetrated accurately by the hypodermic needle. Superficial nodules should never be treated in this way, as the solution is apt to damage the skin and cause a phlegmon. Ten minims or less of a one-per-cent solution in water may be given. It may cause some aching, but if the nodule has been accurately injected, shrinking, with great relief to the rheumatic pain, follows.

Where intestinal indigestion is present, and especially in lumbago, a course of mild purging (gray powder, compound rhubarb powder, salines) is advisable. As regards specific remedies, it cannot be said that any are known which cause absorption of the fibrous induration. In quite recent cases the author has observed that potassium iodide gives relief, but in regularly chronic cases any benefit is not very apparent. Salicylic compounds lessen pain during the exacerbations. Their action is not curative, however, as they cannot be expected to remove hard fibrous tissue. The same is true of phenacetine, phenazone, quinine, and all similar compounds. Alkalies, ammonium chloride, colchicum, guaiacum, actea racemosa, do no good. Iodine and local blistering are helpful, especially over joints or nerves.

Recent cases, where the fibrous thickenings are in the early stage and still plastic, may be cured by a course of hydrotherapy, but inveterate cases only obtain temporary relief from their sufferings. The drinking, bathing, and general massage promote absorption of the serous exudation in the fibrous tissue, and possibly some shrinking. This usually gives for a time complete relief to the pain, aching, and stiffness of chronic cases, so that the patient feels much more happy and energetic. The indurations still remain, however, and are apt to swell and give trouble under the influence of exciting causes. The regular purgation obtained at Harrogate by the sulphur water improves intestinal digestion and does much good in certain cases.

The broad rule is to avoid gastrointestinal fermentation, and the consequent absorption of irritant products from the bowel. Indigestion certainly causes aching in many rheumatic subjects, and the best way to avoid it is to eat plainly but sufficiently of an ordinary mixed diet. Any articles which are well and easily digested by the individual may be allowed.

Residence in a dry, stimulating climate often brings about spontaneous cure. A damp atmosphere and a seaside climate increase the symptoms, and seem to favor the conditions which give rise to chronic rheumatism.

Certain nodules after prolonged massage remain very hard, and refuse to be dispersed. If they cause pain and aching, they can be removed surgically. Removal gives complete relief. It is sometimes not an easy operation, as the small mass of fibrous tissue often lies deep, and may be difficult to find.

THE ALKALINE TREATMENT OF DYSPEPSIA.

HUCHARD in *La Revue de Thérapeutique* of January 15, 1904, discusses the treatment of dyspepsia by means of the alkalies, especially bicarbonate of sodium, which he considers to be the most useful drug for general use. Its effects vary greatly with the quantity which is taken and with the time at which it is administered. Thus, small doses taken before meals stimulate the secretion of gastric juice and cause contraction of the muscular coat of the stomach, while large doses taken after meals exert a retardative influence upon the process of digestion.

Because of this double action the drug is of service in two distinct forms of gastric disturbance, namely, atonic dyspepsia

with anorexia and in hyperchlorhydric dyspepsia. In the former it is given in 3- or 5-grain doses from one-half to one hour before meals, and in the latter in doses of half or even one drachm, one, two, or even three hours after meals, so that it may saturate the excess of hydrochloric acid which is present in the stomach. The small doses which are employed in atonic dyspepsia should not be used longer than four weeks lest the secondary depressant effect of the drug be produced. Huchard states that he has never observed a case of alkaline cachexia result from this treatment, but on the contrary he has seen a considerable increase in body weight follow its employment.

ERGOT IN ALCOHOLISM, MORPHINISM, AND THE GENERAL CLASS OF DRUG-HABIT CASES.

About a year ago LIVINGSTON wrote a paper on this subject. He now takes it up again in the *Medical News* of March 5, 1904. His study of this class of cases and of nervous irritability and excitability in other classes has led him to a positive conclusion that the nervous symptoms depend directly on a disturbance of the vascular system in the nerve centers, and that the circulatory disturbance is due to paralysis of the sympathetic or vasomotor centers.

The logical conclusion is therefore that the prime indication is to tone the relaxed, dilated vessels and bring about as promptly as possible an equilibrium of the circulation. There are several methods by which this result may be wholly or partly secured.

1. Cold to the head and spine by means of ice-cap and spinal bag; or hot followed immediately by cold sponging of the spine, repeating these alternately half a dozen times or more, and such séance several times a day.

2. Galvanization of the chain of sympathetic ganglia by use of the hand electrodes, stroking from occiput to sacrum, the electrodes one on either side of the spine, and separated about four inches from each other. The quantity of current should be 10 to 15 milliamperes and continued for twenty minutes. This should be followed by similar applications of five minutes each over the upper, middle, and lower cervical sympathetic ganglia; or the static current may be used, and the author particularly recommends a prolonged application of the static wave, half an hour or more, to the whole length of the spine with a spark-gap of five to eight inches, and this séance followed by sparking over the lines of the sympathetic ganglia.

3. Dry-cupping over the entire spine and including the sides of the neck, not with the old-fashioned alcohol cups, but with the modern valve cups, which are emptied by means of an air pump.

4. Massage, which, properly applied by a skilled masseur, is certainly of much service in stimulating the general circulation, and therefore in relieving congested areas.

5. And last but by no means the least effective method, hypodermic injections of ergot. While the other methods may be effective, this one is presented as the most certain and the most prompt in its action. The author makes this assurance not only upon many practical demonstrations, but upon two grounds that he believes will appeal to common sense and to reason.

The first step in the method which the author has been accustomed to use is to wholly and immediately discontinue the use of the narcotic and place conditions about the patient which will absolutely prohibit access to that drug, or to any other that would be regarded as a substitute. By this method he demonstrates the most clearly to the subject what he is loath to believe, viz., that neither the drug he has been using nor any other of similar effect is necessary to him. He at once begins the application of ergot, because he knows that within from twenty-four to thirty-six hours there will begin, in the extreme cases, a violent reactionary stage, the basis of which will be a dilated state of the blood-vessels in the nerve centers, which may be modified by the action of ergot upon their muscular coat. At the same time he gives a mercurial purgative, followed in a few hours by a sufficient saline to assure prompt purgation. This is desirable in order to limit or avoid the irritative effect of a loaded bowel upon an irritable and excited brain and cord, and also to prepare the digestive tract for especially good service during the coming exhausting ordeal. In preparation also against exhaustion he discontinues the ordinary meals and gives abundant fluid

and easily digested nourishment every three hours, such as a good form of beef, and the best of which he knows is a paste consisting of the ordinary fluid extract to which has been added the desiccated and pulverized fibrin. This form is therefore not wholly soluble, the fibrin settling to the bottom if not constantly stirred. The whites of a couple of eggs dissolved in half a glass of cold water, to which a pinch of salt has been added, make another good three-hour-interim meal, as do also some of the cereal or lactocereal preparations on the market. With the exception of the egg food it is better to give all these liquid foods quite warm or hot. Do not use nutritives prepared with alcohol. The bowels must be kept open at least once a day, better two or three times, and the author gives the fluid extract of rhamnus frangula preference for this purpose, in doses of one or two drachms at bedtime, and perhaps also forenoon and afternoon. The frequency of application of the ergot will depend upon the degree of addiction, and upon the general condition of the subject when the drug was discontinued. The larger the daily dosage had been, and the greater the nervous prostration at the beginning of the treatment, the greater is likely to be the reaction following the discontinuance, and therefore the greater should be the effort to prepare against this reaction.

IMPROVEMENTS IN DIETETICS OF DIABETICS.

SAWYER contributes a paper to the *British Medical Journal* of March 5, 1904, in which he gives the results of his experience in the treatment of this disease.

In the management of this difficult malady it has been recognized by the profession for many years that abstinence from sugar and from other articles of food which are convertible after ingestion into glucose causes a great lessening in the quantity of glucose in a diabetic patient's urine, and also a marked diminution in the heightened density and quantity of the urine. These changes for the better are coincident with arrest of bodily wasting, even with some gain of bodily weight, and also with general improvement, in a very large proportion of those persons who are suffering from diabetes.

To meet these rational and practical indications as to treatment much care has been taken by many physicians to devise an extended, varied, and agreeable and practicable dietary. Until the researches of Mossé were published two years ago it was our therapeutic rule to withhold potatoes in saccharine diabetes. The potato contains from 16 to 24 per cent of starch, and it used to be classed without qualification amongst food inadmissible in glycosuria-in a case treated upon the diabetic principle referred to. His researches have led Mossé to conclude that potatoes, far from being harmful, form a useful and beneficial food in glycosuria, and that they are capable of being substituted for ordinary wheaten bread in daily proportions sufficient to maintain the alimentary ratio—that is to say, in the proportion of two and a half to three of potatoes for one of bread. Mossé found that a daily ingestion of potatoes in quantities of from 1000 to 1500 grammes, roughly of from 2 to 3 pounds avoirdupois, brought about in nineteen out of twenty cases of diabetes speedy diminution of the glycosuria, quick relief of thirst, and general improvement in the patient, and all this in all forms of diabetes. The salts contained in the potato are chiefly those of potash. Potash is contained in potatoes in much larger proportion than in wheaten bread, and Mossé attributes the superiority of potatoes in a diabetic dietary to the increased ingestion of potash. The author's own experience in practice during the last two years is confirmatory of Mossé's conclusions.

In the author's opinion it will be found in practice that the permission of potatoes in the food of diabetics is one of the greatest dietetic advances of our times. Potatoes cooked in any of the ordinary ways are a grateful food. He points out that for the retention of the salts of the potato the vegetable should be cooked in a peculiar way. It should be cooked by steaming with its "skin" on. If potatoes be peeled and then cooked by steaming, they lose in the cooking large proportions of their potash and of their phosphoric acid, and they lose more of each of these their constituents if they be peeled and then cooked by boiling.

It is possible that the beneficial results of Mossé's discovery and teaching as to the use of potatoes as a food in diabetes

might well be carried much further in the dietetics of diabetes than in merely the free allowance of properly cooked potatoes in a dietary. The writer proposes that the therapeutic difficulty as to the prohibition of ordinary bread for a diabetic may be met advantageously by making bread, cakes, and biscuits for diabetics by using the "flour" of properly cooked potatoes instead of the flour of grain. Excellent and delicious baked cakes can be made from paste composed of a kind of flour prepared by rubbing down potatoes cooked with their coats on by steaming, blended with cream and butter. With the aid of some good cooks in his kitchen the author has made many experiments as to the formation of bread and biscuits from bran and the flour of potatoes. As the best results at present reached from these inquiries, he has decided upon the following details for the making of these new biscuits and bread for diabetics:

Bran and Potato Bread.—Take half a pound of flour of steamed potatoes, quarter of a pound of bran, half an ounce of German yeast, half an ounce of butter, one egg. Twenty-four hours before making the dough cook the potatoes by steaming them in their "jackets," then peel and break up into flour with the fingers. Mix all the ingredients together, and let the paste stand near the fire for an hour to "rise." Bake in greased tins for an hour and a half.

In common with many other physicians, he has arranged and employed in practice for many years a diabetic dietary which is sufficiently strict for practical purposes, and which is in harmony with the principle of abstinence from sugar and from all other articles of food which are convertible into glucose after ingestion, and of such a formulated dietary he has been accustomed to give a printed copy to a patient in a suitable case. His dietary rules in diabetes, as now modified by Mossé's permission of potatoes, and by the developments the author has devised of potato-made bread, biscuits, and cakes, prepared in the ways he has described, would read:

May Eat.—Butcher's meat of all kinds, excepting liver. Pork, ham, bacon, poultry, game, potatoes steamed in their "skins." Fish, oysters, crabs, lobsters. Animal soups, not thickened, excepting by potatoes. Mutton broth, beef-tea. Bran and potato bread or biscuits, potato cakes, eggs, cream, butter, cheese, greens, watercress, mustard and cress, lettuce, mushrooms, nuts; jelly or custard, unsweetened.

May Not Eat.—Any bread or biscuits but those made of bran and potato, sugar, asparagus, broccoli, cauliflower, carrots, parsnips, French beans, peas, turnips, arrowroot, macaroni, rice, sago, tapioca, vermicelli, pastry, excepting potato cakes; puddings; fruit, fresh and preserved.

May Drink.—Water, tea, coffee, soda-water, claret, hock, spirits and water, unsweetened; bitter ale, very sparingly; milk, very sparingly.

May Not Drink.—Cocoa, chocolate, champagne, porter, stout, home-made wines, liquors, cider, sweet wines, ale.

ADRENALIN IN ACUTE GLAUCOMA.

The *Medical Press* of March 9, 1904, has this to say about this subject: The pathology of acute glaucoma has been variously described as being due to a retention of the intra-ocular fluids or to their hypersecretion. While modern ophthalmological opinion is inclined toward the acceptance of the former theory, there can be little doubt that vascular congestion plays no small part in the production of the glaucomatous state. The performance of iridectomy and the use of myotics have, up to the present time, constituted the main forms of treatment. The anti-glaucomatous effect of a myotic depends, of course, entirely upon its power of bringing about contraction of the pupil, and if this cannot be done the drug is valueless. M. Grandclement showed at a recent meeting of the Société des Sciences Médicales of Lyons a patient, aged thirty-seven, in whom he had cured an attack of acute glaucoma by the instillation of adrenalin. The strength employed was 1 in 5000, and the solution was dropped into the affected eye every half-hour for three consecutive days. It has been found experimentally that suprarenal extract arrests the formation of the aqueous humor in the eyes of animals, and therefore diminishes intra-ocular tension.

In the discussion which followed the exhibition of the case, M. Aurand stated that he had used adrenalin in a case of double glaucoma, in which relief of pain and some contraction of the pupil were

obtained, but he performed iridectomy afterward. Until it can be proved that this beneficial effect of adrenalin is more than temporary, it is doubtful whether this powerful vasoconstrictor will find favor with ophthalmic surgeons. If it be established that operation affords the best chances of success in acute glaucoma, there can be no object in wasting time by employing less radical measures. We have by no means exhausted the therapeutical possibilities of suprarenal extract, and its use in this department of surgery may, after further experiment, be found of service.

THE MANAGEMENT OF PNEUMONIA WITH SPECIAL REFERENCE TO HYDROTHERAPY.

In the course of an address in California, BARUCH of New York stated, according to the *Southern California Practioner* for March, 1904, that in his opinion the elements of the newer management of pneumonia are as follows:

1. Absolute rest. The patient must be completely isolated from the family and friends, under the care of a nurse or member of the family; he must not be allowed to leave his bed for any purpose; all mental and physical effort must be avoided.

2. Ventilation of the sick-room. This must not be perfunctory. Examine for yourselves how far the window is open, and if the passage of air through this opening is not obstructed by a window shade. Even in cold weather there must be constant access of fresh air to the sick-chamber; if the nurses find it uncomfortable, let them wear more clothing. A febrile temperature prevents the contraction of a cold which is so much feared. Give your patient plenty of oxygen in this manner in the early stages, and he will require no oxygen inhalation later. The latter appears rational, because the law of diffusion of gases by which the residual air in the air cells is supplied with oxygen precludes the saturation with concentrated oxygen gas.

3. Drink. The patient should receive four to six ounces of water at 40° F. (ice water, prepared some time previously) every hour. In order to insure the methodical administration of this ice water, the writer often orders a few drops of hydrochloric acid or other placebo to be taken in four to six ounces of ice water every hour. It is to be borne in mind that the sudden contact of very cold water with the mucous membrane of the stomach produces the same shock and reaction and consequent enhancement of the circulation which results from a similar application to the skin. This is evident when in summer, after drinking ice water, the body perspires profusely. The flow of urine is considerably increased, much more so than by the imbibition of larger quantities of tepid water. This is an important point and but imperfectly understood.

4. Stimulants. Under the management of pneumonia which the writer recommends to us, stimulants become unnecessary, except in alcoholics, who are accustomed to them as a daily pabulum. The writer has recently seen in consultation with Dr. H. A. Rogers, of New York, a case of influenzal pneumonia, the patient being sixty-eight years old, a diabetic, and the urine giving acetone reaction. Both lungs became successively involved; the case was desperate, and yet the management here outlined sufficed with but little stimulation to carry the case to a successful issue (of course the acetonuria was met by large doses of bicarbonate of soda). In a case of pleuropneumonia in a member of his own family, whom he brought to that favored clime of California for convalescence, two teaspoonfuls of brandy, for the purpose of cheering him (by suggestion), was the only stimulant administered, although the case was of very severe type, the temperature reaching 105° F. Alcoholics may receive one-half to one ounce of brandy every three or four hours, according to their previous habits.

5. Medication. The writer still has the Southern habit, which has so often served him well, of opening all cases of pneumonia with eight or ten grains of calomel for the purpose of clearing the decks for action, as it were. The calomel is administered dry upon the tongue, and the mouth is well rinsed with water mixed with the calomel before the latter is swallowed, for the purpose of preventing ptyalism and destroying all diplococci that may be present in the mouth. Several copious movements are usually the result, and if these are absent citrate of magnesia is administered. Avoid the small doses of

one-tenth of a grain very frequently administered, which have become the vogue. They tease the intestines and disturb the patient's rest by the necessity of frequent administration; they do harm by interfering with absolute rest and irritating the intestinal canal needlessly. Strychnine is sometimes useful when the first sound of the heart becomes feeble. It should be administered hypodermically in doses of one-sixtieth to one-thirtieth of a grain every six hours, under these conditions of cardiac failure. Small doses of the coal-tar preparations are sometimes useful as calmative agents when the patient is restless with high temperature. One dose of six or eight grains of ammonol will produce sleep and quiet the patient. It should not be administered oftener than once in twenty-four hours. The author has inveighed against the routine use of antipyretics in typhoid fever in a previous lecture. Its routine use for temperature reduction is just as irrational and damaging to the heart and excretory organs in pneumonia.

CHRONIC RHINITIS: ITS VARIETIES AND TREATMENT.

In the *Physician and Surgeon* for February, 1904, FREER writes upon this subject. He says that atrophy of the structures of the nasal interior is irremediable, and as long as it is not associated with abnormal changes in the nasal secretions does not inconvenience the patient. Cases with simple atrophy, therefore, need no treatment. To remove the adherent masses of dried pus and mucus in atrophic rhinitis the hard-rubber irrigating tube is efficient when the scabs are not too hard or firmly adherent, patients learning readily to manipulate the tube and by means of a bulb syringe to wash the nose and nasopharynx clean in a few minutes. In some cases the crusts are so firmly attached that they may not be removed unless softened. For this purpose Gottstein's plugs are efficient. A square piece of cotton about three inches long is neatly rolled into a cylinder between the fingers by means of an applicator around one end of which one inch of the cotton square is twisted, to lightly hold it. Then the applicator is pulled out, the cotton roll is dipped into an ointment and rotated into the nostril as far as it will go. This the patient may readily do with his fingers. The plug should be large enough to snugly fill the nostril. The screw recommended by Gottstein for introducing the cotton is unnecessary. If retained from a half-hour to an hour the cotton, aided by the ointment, will soften the crusts by exciting secretion and preventing its drying in the air current, so that the resulting pasty matter may be readily washed away.

After removal of the crusts the nose should be irrigated with a solution of potassium permanganate of from one-eighth to one-half grain to the ounce. This disinfectant is not needed to remove fetor, for the latter disappears with the scabs, but is efficient in preventing their formation and stops the return of the odor by rendering the mucosa aseptic. The author has also found potassium permanganate in a spray of from four to eight grains to the ounce effective in preventing the reformation of scabs in the laryngeal and tracheal extension of the disease. For this purpose he uses a long tracheal spray tube which he designed for the purpose. These methods of keeping the nasal cavity clean will in many cases lead to a gradual lessening of the formation of scabs, the patient needing to wash out his nose at rarer and rarer intervals, and complete recoveries have been produced in the course of a few years even in young persons. There is a decided tendency to spontaneous recovery toward middle life, and it is in the younger subjects that treatment needs to be most persistent. The deafness and anosmia resulting from atrophic rhinitis are of course not curable.

Suppuration of the accessory sinuses as a possible complication of atrophic rhinitis should always be searched for, but in the majority of cases is not present. Ordinarily empyema of the frontal sinus, ethmoid cells, maxillary antrum, or sphenoidal sinus, though it may lead to the formation of crusts of dried discharge, causes irritative hypertrophy, rather than atrophic rhinitis. Sinus disease accompanying rhinitis atrophicans must be treated by operation before the rhinitis can get well.

The great roominess of the nasal cavity in atrophic rhinitis favors the drying of secretions, which form a protection under which bacteria flourish, producing putrefaction. That decomposition does not always occur is probably due to the variable

extent to which the secretion differs from the standard of normal mucus, as healthy nasal mucus is a poor culture medium for germs. The drying of the nasal secretion takes place much more readily in the dry air of heated houses in winter than when the atmosphere is charged with moisture in summer. For this reason many patients suffer an aggravation of their trouble in winter. On this account an effort should be made to have the air in the patient's room made as artificially moist as possible.

Some obstinate cases of atrophic rhinitis are but little improved by the cleansing treatment. For these the method called copper electrolysis is of value. As usually employed, a negative steel needle is inserted under the mucosa at the base of the septum, while a positive copper one is pushed under the mucous membrane of the middle or lower turbinal. The sittings are of from five to ten minutes' duration, and the current strength from three to ten milliamperes. The negative needle is apt to create destructive cauterization if kept too long in one place. The effect of copper electrolysis is marked, the crusting in many cases ceasing for weeks or months after one or a few treatments. Recently the author has tried, instead of the needles, surface electrolysis with probe-shaped electrodes, the negative one, which may be of any metal, being wrapped in moist cotton and inserted in one nostril, while the positive pole, a large copper probe, is moved about over the mucosa of the other naris. The current strength is from three to ten milliamperes, and the time five minutes. For the nasopharynx the author uses a large ball-shaped copper positive electrode. He has seen marked lessening of the crusting follow this method, but his experience is as yet too limited to assure its usefulness. As it does not cauterize, he suggests its trial before copper electrolysis with the needles is resorted to, as it can do no harm.

Another method of treatment which he has found beneficial for obstinate crusting in atrophic rhinitis is massage of the entire mucosa of the nasal fossæ, and through them of the whole surface of the nasopharynx, which may be readily reached through the wide nasal passages. Stiff metal applicators bearing cotton swabs soaked in a ten-per-cent protargol or argyrol solution should be used. The rubbing should be vigorous, and a fresh cotton swab used as soon as the one employed becomes filled with mucus. The non-sensitive mucosa bears the treatment without much or any reaction.

THE GENERAL MANAGEMENT OF DIABETES.

In an article contributed to a symposium on this subject published in the *Albany Medical Annals* for April, 1904, SHATTUCK, of Boston, states that as he has grown older he finds that he has more and more discarded the use of diabetic breads. No diabetic bread which is palatable for any length of time is safe. We must always reckon with human greed for gold, and so ordinary, or perhaps Graham, bread, the percentage of sugar-forming material in which is known, is preferable to running the chance of deluding the physician and his patient. The author once visited *incognito* the agency of a well known company which purveys for diabetics. "Have you bread for diabetics?" "Yes." "How much starch does it contain?" "None." "What! No starch?" "None!" His friend, Profesor Wood, however, said the bread contained sixty per cent of sugar-forming material. Gluten flour from another manufacturer had a low sugar-forming percentage one year and a high one the next.

If alcohol is considered desirable it is best given in the form of whiskey or brandy, a *brut* champagne, Moselle wine, or one of the California hocks, some of which contain practically no sugar.

The author has never used the skimmed-milk cure as advocated by Donkin. To remove the fat and leave the sugar does not seem consistent with common sense. He concedes that it has worked well in some cases, but wonders if the explanation does not lie in the fact that these patients had been eating far too much, and would have done equally well under a diet judiciously restricted in quantity as well as quality.

A day of starvation once every two or three weeks is very useful in some cases. Austin Flint's plan of keeping a patient in bed from Saturday night until Monday morning fasting has seemed a good one. If hunger is felt a little beef tea

may be a comfort without really invalidating the fast.

The bowels should always receive careful attention—all the more so if acetone and diacetic acid reactions are present in the urine. The skin also should not be neglected. Hot or vapor baths at home, followed by active friction, a Turkish or Russian bath at a well managed establishment, if the general state of the patient permits, are useful adjuvants, especially if the skin be harsh, dry, and inactive. Ralfe thinks he has succeeded in preventing impending coma by the hot bath. In milder cases, with the skin still relatively active, the tonic effect of a daily cool or cold bath, provided that reaction be prompt, thorough, and maintained, is of service. Diabetics are sensitive to cold, and wool or silk underclothing of light or moderate weight is usually desirable. We generally err in this country in the colder season by wearing too heavy underclothing. We keep our houses at summer temperature, and voluntarily load ourselves with clothing which we would think justified revolution if a czar compelled its adoption. A diabetic should have several overcoats of varying thickness and warmth, and can scarcely be too well wrapped up while drivng in an open carriage, the only form of conveyance really fit to drive in except in stormy weather.

Worry and anxiety are to be avoided as far as possible. Such avoidance is, alas! only too often easier to enjoin than to secure; but we must do our best. The man of large affairs and responsibility must be helped to systematize his work, to throw every possible detail on subordinates, and to shorten his working hours. How many of us inspect the down-town offices of our patients in active business in order to remedy defects of light, ventilation, and heating of the apartments where more time is passed than anywhere save in the bedroom? In many cases the sum of small advantages forms a large aggregate, and sunshine and open fires are better classed among the greater than the small advantages. In a word, we are dealing with a class of people whose resistance and vitality are more or less diminished; in many of whom, we have reason to believe, the nervous system is especially at fault. The desirability of moderating nerve strain is therefore obvious.

Muscular exercise is useful directly, in that it burns sugar; indirectly, in that it aids blood and lymph circulation. It is therefore peculiarly adapted to diabetics, provided that thought and intelligence govern its use. In excess it is potent for harm. Outdoor exercise is far better than in any confined space, if the condition and circumstances of the patient permit. As to the form—walking, golf, tennis, horseback—it must depend upon the purse and taste. We are all so constituted that what we enjoy is, on the chances, better tolerated than what we dislike. Calisthenics and the various forms and degrees of massage, carefully adapted to the individual patient, are for the severer cases. Patients debilitated from any cause rightly ask direction as to the amount of exercise they can take. If the intelligent coöperation of the patient can be secured better results will follow, even in sanitarium treatment; and most diabetics are not, and cannot be, under constant supervision. The best rule the author has been able to formulate is the following: The patient is told, "You exercise; you feel tired; you rest an hour and fatigue passes. That fatigue was physiological, healthy, beneficial. If, on the other hand, after you rest you are still tired, you have done too much."

IS IODIDE OF POTASSIUM A SPECIFIC IN LOBAR PNEUMONIA?

Under this questioning title ALTSHUL in the *Medical Record* of March 26, 1904, recites his views and results in connection with the employment of this drug in the care of persons suffering from this disease. He tells us in none of his cases was there the least semblance of a crisis, the invariable termination being by lysis. This applies to both temperature and general condition of the patient. This gradual change was remarkable, as usually about eighty per cent of the cases terminate by crisis. The most probable explanation of this difference seems to be that the antiseptic and bactericidal action of the drug inhibits the growth of the pneumococcus, hence there is a diminution of the toxins produced. These toxins being in circulation in but small quantity, their effect is readily counteracted. The control of the symptoms alone through the action of the drug is hardly sufficient explanation for the change from crisis to lysis. [This seems to us largely hypothetical.—ED.]

In spite of the generally favorable action of the drug, the duration of the disease was not shortened.

The temperature even in cases of apical pneumonia was never very high, rarely exceeding 103°, never above 104°, when treatment was commenced early in the disease.

Complications, endocarditis, pericarditis, edema, embolism, etc., were never met with.

If the treatment was commenced within the first thirty-six hours after the initial chill the disease was at no time of the violent type with marked cerebral symptoms. If these symptoms were already present when the treatment was instituted they rapidly disappeared, usually within twenty-four hours, and the patient, who previously was perhaps wildly delirious and intractable, became calm and rational. Headache was the exception, and when present was very slight and of short duration.

In all cases the patient treated with the iodide seemed to feel very much more comfortable, and seemed less ill than usual.

We have thus seen that, in addition to the symptoms, the very important and perhaps vital factors in the course and outcome of the disease, the toxemia, the leucocytosis, the blood's alkalinity, and the condition of the heart, are most favorably influenced, if not controlled, by the effect of the iodide.

The iodide of potassium is used in preference to the iodide of sodium, because of its more rapid absorption and its greater alkalinizing power.

Method of Treatment.—The following plan, with but trifling and immaterial modifications, is the one which the writer has pursued in all cases:

On the establishment of a diagnosis the patient immediately receives an initial dose of at least 10 to 15 grains of the iodide of potassium, which dose is increased by five or ten grains, according to the severity of the case, every two or three hours, day and night, and this is continued throughout the whole course of the disease, until defervescence is well established. However soft the pulse may become the dose is kept up, irrespective of the quantity which the patient is taking, the guide in our dosage being the regularity of the heart, as determined not by the pulse alone, as this may be irregular with a regular acting heart, but by auscultation of the heart itself, and the character of the heart sounds, particularly of the second pulmonic sound; if this be clear and distinct, we are accomplishing what we desire. The left ventricle will take care of itself, in the vast majority of cases, if we look after the right heart. Should there be any irregularity of the heart itself, which the writer has rarely found to be the case when treatment was commenced early in the disease, strychnine is given in doses of 1/60 to 1/40 of a grain every four or six hours, until the heart becomes regular, being found sufficient to control the irregularity. The iodide was prescribed in a 50-per-cent solution, and was administered in milk, thus combining medication with nourishment and necessitating less frequent disturbance of the patient. In this manner the author has in a large number of cases given from 1000 to 1500 grains per day; in one case as high as 1800 grains. Dr. H. T. Prentiss, of Holyoke, Mass., reported to him a case in which he gave 3000 grains daily for about four days, and another patient, a child, to whom he gave 2100 grains daily for two days, with absolutely no signs of intolerance and with recovery from the disease in both cases.

At the commencement of this plan of treatment a slight coryza occasionally appears, but rapidly disappears if the dose be pushed.

In cases in which the disease at its onset is accompanied by marked gastric disturbances, the author has combined with the iodide the aromatic spirit of ammonia. The use of this agent has been suggested by Sir James Paget as increasing the tolerance of the iodide.

If for any reason it is impossible to give the iodide by the mouth its administration per rectum is indicated, or when this is not possible, or in extremely urgent cases, by subcutaneous injection. From experiments performed in the laboratory of Prof. William H. Park, to whom the author expresses his indebtedness for advice as well as for the privileges accorded him, he has found that concentrated solutions (1:4) are well borne by rabbits, and do not seem to cause much pain. Occasionally when two drachms of this solution were injected there was sloughing, but this was the exception, and the subcutaneous injections seemed to be well borne, both locally and generally. The author, however,

suggests the deep muscular injection, when very concentrated solutions are necessary, as causing less pain, although subcutaneous injections are preferable, owing to their more rapid diffusion.

In treating the disease by this method, the fact cannot be emphasized too strongly that our guide in dosage must be the condition of the heart, its regularity, and the distinctness of the pulmonic heart sounds. The quantity of the drug given per dose or per day must not concern us, our only consideration being its effect on the heart. By this it is not meant to infer that we can keep on indiscriminately pouring down the iodide, without reference to the quantity, but that we must be governed entirely by the effect produced. The physician should increase the dose rapidly and persist until the desired result is obtained.

This plan of treatment requires the same judgment and circumspection in its administration as is necessary in every other therapeutic measure. From the author's experience and as a result of observations on this large number of cases of his own and his colleagues, failure to obtain favorable results will be attributable to faulty methods and lack of courage rather than to ineffectiveness of the treatment.

[We have abstracted this article because it is quite out of the ordinary line of thought in regard to this disease. We confess that we do not expect to employ it ourselves.—Ed.]

ENURESIS IN CHILDREN.

Lewis states his views as to this condition in the *British Journal of Children's Diseases* for February, 1904. The treatment of this complaint, which has for some years been successfully carried out by the writer, was suggested by the consideration of a similar condition which occurs in infants fed on starchy foods. Such children always pass a larger amount of urine than normal. Their nurses complain that they are always soaking their diapers. When their starchy food is cut off this symptom disappears. It is the same with the victims of enuresis. In most cases a rigid antidiabetic diet removes the symptom in a few days. The cause, however, due to a general depression of health produced by an excessive starchy diet, requires general tonic treatment at the same time. During the cure starchy food may usually be allowed for breakfast without "accidents" occurring at night. Without any other treatment hospital cases are relieved often at once, and finally cured, by being taken as in-patients and fed on the ordinary hospital diet. In private cases even small quantities of bread or cake, given at dinner or tea early in the treatment, cause the bed-wettings to recur. In about three to four weeks, sometimes sooner if the tonic treatment is pushed as well, a normal diet may be given without enuresis happening.

THE EXTRACTION OF TEETH UNDER CHLOROFORM.

The *Edinburgh Medical Journal* for March, 1904, states its editorial view of this matter in the following words:

From time to time the public are painfully impressed by a paragraph in the newspapers headed "Another Death from Chloroform!" A medical man was heard to remark recently that " it was a pity such notices were published and the public alarmed," but we cannot agree with this opinion. We consider the sooner the laity are alive to the risks they run, during so simple an operation as the extraction of a few teeth under chloroform, the better for all concerned.

The most recent case of death occurring under these circumstances which we have noticed is that of a young clergyman in the west of Scotland, who was put under chloroform in his own house, for the purpose of extracting a few teeth. Within a few minutes he fell forward and expired.

This is the fourth case of the kind we have known of within a comparatively small area during the last twelve months. All these patients died of heart failure, it is safe to assume, but whether they actually had an overdose or not we are unable to say, nor from our point of view is it of much moment. The point is, that they should never have been subjected to the risk of chloroform, but one of the now fairly numerous safer anesthetics should have been employed. For the past ten or fifteen years most dental and surgical journals have been urging the utter unsuitability of chloroform as an anesthetic in dental work, and still the medical profession, in North Britain at least, persist in

employing chloroform for the operation in question. In dental work the mortality under gas and ether is a negligible quantity, and year after year dental surgeons are being sent out, for the most part trained to administer this combination, and if the medical profession in Scotland refuses to wake up to the facts of the case the dentist will, in all probability, take the bull by the horns and dispense with the services of the medical attendant, if they are to be of so lethal a nature.

The administration of chloroform for the extraction of teeth should, and we consider soon will be, regarded as malpraxis.

REMARKS UPON "ETHYL CHLORIDE" AS A GENERAL ANESTHETIC.

In the *British Journal of Children's Diseases* for February, 1904, CHALDECOTT states that he has now administered ethyl chloride over five hundred times, and the conclusions arrived at are: (1) It is the best anesthetic known for what may be called "single-dose" cases, when the patient is anesthetized, the mask removed, and the operation performed without any further administration; (2) it is certainly worthy of an extensive trial in all minor operations; (3) it is a safe and rapid means of inducing anesthesia as a preliminary to chloroform or ether narcosis; (4) although its effects are transient it is doubtless a powerful anesthetic, and should be carefully administered, and the patients properly prepared.

PURE OLIVE OIL AND ITS USE IN THE TREATMENT OF CHRONIC DYSENTERY AND ALLIED CONDITIONS.

RUTHERFORD of the U. S. army writes in *American Medicine* of March 12, 1904, of his experience with olive oil in therapeutics.

1. The internal administration of olive oil largely increases the flow of watery bile.

2. The normal liquid bile possesses certain physiological properties: (*a*) Its presence in the intestine favors the absorption of fats; (*b*) it stimulates intestinal peristalsis; (*c*) it acts as an intestinal antiseptic, both directly and indirectly. "Quite recently a further function of the bile has been discovered, namely, that of dissolving very readily certain specific bacteria of a pathogenic character" (Herter). It is still further contended for bile that it has the property of reënforcing the ferment action of the pancreatic juice.

In this connection it is of quite equal importance that, following upon the internal administration of olive oil, typical cases of chronic dysentery, practically without exception, show changes in their condition as follows:

1. Positive evidence of increased quantities of bile in the feces.

2. Decrease in the number of daily bowel movements and marked improvement in the character of the same.

3. Gradual cessation of signs of fermentation and putrefaction along the gastrointestinal tract and consequent subsidence of pain and tenderness.

4. General systemic improvement—gain in appetite, repair of digestive facilities, symptoms of improved nervous system, and rapid gain in weight and strength.

5. Apparent positive cure after an average time of two months and upward, with few recurrences up to date.

THE TREATMENT OF SENILE PNEUMONIA.

COHEN in a lecture reported in the *New York Medical Journal* of March 12, 1904, states that it is rarely wise to wake the patient, either for food, for medicine, for bath, or for any other application. Save in exceptional instances, sleep will do more to favor recovery than the agent for whose sake it is interrupted.

At times in the course of these cases oxygen is to be given by inhalation. Oxygen is a remedy of very great usefulness in pneumonia, typhoid fever, and in septic conditions generally, if it is used properly. The mistake usually made is to wait until the patient is three-fourths dead, or perhaps nine-tenths dead, and then give him oxygen. Oxygen will not revive the dead. It does not work miracles, but, given to the patient in time, it will very often prevent death in severe cases, and will always give much relief; in cases of moderate severity it tends to render the course milder, the recovery more sure. If we give oxygen we must not be stingy with it. If we want to produce results we must not only give it in time, but give it freely; a bagful every two or three

hours is playing with it. Such a method may ease the mind of the doctor and soothe the distress of the family, but it helps the patient very little. Oxygen must be given freely over long periods, unless the patient is distressed by it, as rarely happens, or unless it is necessary to put the patient to sleep and the oxygen interferes with his sleep. As a rule it promotes sleep, and often peaceful sleep continues during its use. Nitrous oxide may be combined with it as a sedative to cough and as a sleep-producer—about 8 parts of oxygen to 2 of nitrogen monoxide, or even 6 of oxygen to 4 of nitrogen monoxide—in cases in which opium, which is usually a dangerous drug in pneumonia, would otherwise be needed. The author usually employs the purified gas furnished under high compression in steel cylinders, to which a wash-bottle and inhaling terminal are suitably attached. The way to do is to turn on the oxygen and put the end of the inhaling tube either in the patient's nostril or in his mouth, according to circumstances, according to the permeability of the nasal passages, according to the consciousness and strength of the patient. It is better not to use a glass tube, except in the nostril, and either in nostril or mouth an iron or hard-rubber terminal is better, so that the patient cannot bite on it and break it. Turn on the oxgyen at a convenient rate. We determine this by observation—that is, by watching the flow of bubbles through the water in the bottle. The bottle should never be more than half-filled with water; it should not be two-thirds full, because by a sudden spurt in turning the key or through some disarrangement of the apparatus the oxygen may come very suddenly in too great volume and carry water along with it, choking the patient. There must be a sufficient oxygen space above the level of the water. If the oxygen is allowed to bubble over quietly we can judge by the rapidity of the bubbles as to the rate of flow of the gas. This is a matter of experience, *secundum artem*. The writer has never counted the number of bubbles in the minute, but judged simply by the eye. In a severe case let the oxygen run for an hour, or for six or twelve or forty-eight hours if necessary, removing it only when needed to give the patient rest or sleep, to feed the patient, or to carry out other portions of the treatment.

After two or three hours of continuous administration of oxygen there will usually be sufficient improvement to warrant its intermission for a couple of hours. In milder cases a half-hour's use of the oxygen every second or third hour may suffice. We cannot say, give the patient oxygen for ten minutes at a time every two hours, or give the patient half a bag at a time every three hours, or give him two bags at a time every half-hour. Its administration must be entrusted to skilled hands, and the dosage must be regulated according to circumstances, and may thus be great or little, long or short, as the case may require at the moment.

A NOTE ON PRIMARY ETHER ANESTHESIA FOR SHORT OPERATIONS.

To the *Northwestern Lancet* of March 15, 1904, BROWN contributes a paper in which he calls attention to the value of "primary anesthesia." He says that the fact that short and painless operations can be done under primary ether anesthesia has long been known, but imperfectly appreciated by the majority of practitioners. Early in the present year an article by some foreign writer was abstracted in the *Journal of the American Medical Association,* in which, after an experience of fifty cases, the method was highly commended. The writer claimed that even prolonged operations could be satisfactorily done by inducing the primary effect of the ether at intervals as required.

In view of the fact that general surgical anesthesia involves serious danger to life and health and that such danger is especially great in operations on the throat, the author's custom has been to employ local anesthesia wherever possible, but the most painstaking use of local means leaves much to be desired when tonsils are to be snared or adenoids removed with the mildest means possible —the Gradle adenotome. Glad of a method which might relieve his little patients of some of the horrors of these operations, he has employed the primary ether anesthesia since June 1 in thirty-two operations on 21 different patients, mostly young children. The ether was adminis-

tered by the drop method with the ordinary chloroform mask, from 8 to 12 grammes being used in from one and a half to two minutes, and in most cases following one or two applications of 20-per-cent cocaine. In a few of the later cases, among which was the removal of adenoids of four-year-old twin babies in his own family, the cocaine was omitted without apparent disadvantage.

The children have uniformly taken the ether without objection, breathing deeply with the mouth open, and at the proper time allowing the instruments to be introduced without the necessity of a mouth-gag. Vomiting that was attributable to the ether has not occurred in any case, nor has undue hemorrhage. With two exceptions the operations have been done at his office, the patients reclining on a lounge for an hour before going home. Some of these patients said they were hurt badly, some made but little complaint, and others admitted that they suffered no pain. A few days ago, having occasion to do an internal Wilde's incision, in a case of acute mastoiditis in a four-year-old boy, the author applied the "cocaine, carbolic acid, and menthol mixture," administered ether for one and a half minutes, and then freely incised the membrana tympani and the posterior superior wall of the canal. The boy sat quietly, made no outcry, and later said he had suffered no pain from the operation.

ADRENALIN—PHYSIOLOGICAL AND THERAPEUTIC NOTES.

In a critical summary upon this subject contributed to the *Scottish Medical and Surgical Journal* for March, 1904, GULLAND states that adrenalin has now been used extensively for hemorrhage from the alimentary canal, both stomach and bowel. The dose (of the 1-in-1000 solution) has varied from 6 drops four times a day to 30 drops every three hours, according to the severity and urgency of the condition. It has also been used subcutaneously in doses up to one cubic centimeter every two hours with good effect, and further by enema.

When the remedy is given by the mouth, neither glycosuria nor any unpleasant raising of blood-pressure has been observed. Another point of some importance is that adrenalin has a distinct effect in relieving atony of the muscular wall of the stomach.

It has also been used with excellent results in all forms of hemoptysis in the same doses and ways as for hematemesis. It has been injected into the parenchyma of the lung in doses of 8 to 10 drops and into the trachea by puncture in doses of one cubic centimeter. It seems doubtful, however, whether these latter methods have any advantage over the more usual ones.

In asthma it is sometimes of service, either as a simple spray or application of the solution to the nasal mucous membrane, or as an ointment combined with vaselin and lanolin.

Adrenalin has of course been very widely used in diseases of the larynx and nose, partly in order to cause anemia, partly to assist in the production of anesthesia, and partly because inflamed and edematous mucous membranes shrink so greatly with its use that a much better view is obtained. It can advantageously be combined with cocaine, and if a more continued effect is desired than can be obtained by painting the parts with the solution, a salve of one part of solid adrenalin to 500 parts each of vaselin and lanolin may be used. The solution applied locally is specially useful in edema glottidis, and in uncontrollable epistaxis, in which tampons soaked in the solution may be applied, and the drug also given internally in doses of 20 drops every two hours.

Some writers have, while others have not, observed secondary hemorrhage after its use; urticaria has been seen to occur after endonasal application.

In ocular therapeutics adrenalin has been used in all conditions associated with inflammation and swelling, and operations followed by bleeding; it is very often combined with cocaine or with such remedies as sulphate of zinc. Generally the ordinary 1:1000 solution is too strong; solutions of 1:3000 down to 1:10,000 are preferable. It should not be used in glaucoma, as dangerous increase of ocular tension has been observed. [This is denied by some writers. —ED.]

Opinions are divided as to its usefulness in gynecology. Some have used it with success in bleedings from the uterus,

either internally or locally on tampons; others have not found it serviceable. It is always of value, however, as a preliminary application where the use of caustics is interfered with by hyperemia and hypersecretion. The local application of a 1:3000 solution has been found useful in pruritus vulvæ.

In surgery it has been found extremely useful in small operations. The hypodermic injection of 8 drops of the solution, even if weakened down to 1:100,000, causes sufficient anemia to allow of the opening of boils and abscesses, and similar small operations, without loss of blood. A certain amount of local anesthesia is also produced, and if it be combined with cocaine, the anesthetic action of the latter is greatly strengthened, while cocaine poisoning is rendered practically impossible because of the power of adrenalin in preventing absorption. Even large nerve stems can be rendered insensitive in this way. A useful proportion is 17 drops of a one-per-cent solution of cocaine to 3 drops of the ordinary adrenalin solution or a weaker one. The amount used must of course vary with the area to be anesthetized.

Of great importance are the experiments which have been made on animals in regard to the use of adrenalin-cocaine for spinal anesthesia. It is found that after subdural injection of 8 drops of the ordinary adrenalin solution, as much as a grain and a half of cocaine can be injected into the spinal canal without any bad effect—that is to say, five times an otherwise fatal dose. These results have been confirmed in human surgery, and much of the objection to this method of producing anesthesia has thus fallen to the ground.

In genito-urinary surgery adrenalin is also of value, not only for checking hemorrhage from the bladder by injection, but in small operations, such as slitting the meatus and cystoscopy, where the instillation of a few drops allows the operation to be performed without hemorrhage or pain. Temporary stricture of the urethra resulting from congestion or spasm can be removed by injecting a few drops of the solution.

The power of adrenalin in increasing the blood-pressure has been utilized in the treatment of shock from severe injury, by the repeated intravenous injection of one cubic centimeter of a weak solution (1 in 50,000).

In hemophilia the results have not always been satisfactory, but they are better in such conditions as purpura hemorrhagica. The treatment of Addison's disease with adrenalin has not met with success.

THE URINE IN ETHER ANESTHESIA.

The *Postgraduate* for March, 1904, contains a paper by CHACE on this topic. After discussing the results of examining the urine in 125 cases he concludes that the fact that ether is an irritant to the kidney, and that the urine is more concentrated after anesthesia than before, emphasizes the necessity of having the ether reach the kidney in as diluted a form as possible. The custom of encouraging the patient to drink freely of water before the operation and as soon after as the stomach will permit seems to be a good one; but the plan of giving saline cathartics after the operation, which tend to deplete the system of fluids and concentrate the blood, is one, perhaps, still open to question.

THE TREATMENT OF COUGH IN ADVANCED CASES OF PULMONARY TUBERCULOSIS.

In the *Scottish Medical and Surgical Journal* for March, 1904, KING gives the following advice as to this state: In early, and even in many advanced, cases of pulmonary tuberculosis, cough in the early morning is salutary, and requires no treatment whatever. The accumulation of secretion during the night requires to be removed, and this is accomplished by the act of coughing. In some advanced cases this cough may become excessive and morbid, and may bring about a condition of extreme exhaustion. Some of the worst of these cases occur in the sanatorium, where judicious treatment has produced very comforting and beneficial results. These cases are frequently accompanied or followed by vomiting of mucus or bile. Undoubtedly the best thing to do is to make the patient sip a tumblerful of hot milk, to which has been added 15 to 30 grains of sodium chloride, on waking in the early morning. This simple remedy the author considers

infinitely superior to any other. This not only eases but cuts short the cough. If the patient drinks the milk rapidly instead of sipping it, the cough is usually aggravated. If this has failed, he has sometimes succeeded by gargling the throat with a tumblerful of cold water, to which has been added one drachm of soda bicarbonate.

Excessive cough during the nighttime usually wakes the patient up just after he gets off to sleep, and may continue more or less throughout the night, disturbing his rest and exhausting his strength. In its more troublesome form it is met with in the "chronic bronchitic and emphysematous types." The author has tried many remedies here—*i.e.*, morphine, apomorphine, codeine, apocodeine, heroin, atropine, and terpene hydrate, alone and in various combinations. He thought terpene hydrate would suit this class of cases, but unfortunately it was not successful. He found that by far the best remedy was a pill of ipecac and squill. He usually started by giving one pill at bedtime, and if not sufficient, which was often the case, gave two pills. In his hands no remedy has given more gratifying results than this one.

Excessive cough on getting into bed is usually stated to be due to the patient coming into contact with the cold bedclothes, etc., but this is not the only cause. The bed may be thoroughly warmed and yet this harassing cough continue. In such cases it is thought to be usually due to the irritation of the secretion on the bronchial tubes, owing to the patient's sudden change of posture. The best thing to do in such a condition is to make the patient half recline in bed before lying flat down. This the author has found to succeed admirably in some cases. If this fails, sipping a glass of hot milk may be tried, which soon promotes expectoration, and after some coughing the patient gets relief. Care must be taken that the milk is not too hot, otherwise a restless night will ensue.

Cases which demand special attention are those of the "chronic bronchitis and emphysematous types," in which the cough is very irritable and accompanied by an excessive watery and frothy secretion. It is usually found in men of powerful build with fairly extensive disease. King was led to try nearly everything in his endeavors to alleviate these most distressing cases, with but poor results. He had hoped that atropine would have been of much service here, but it failed. At first under its administration the cough was somewhat easier and the secretion was much lessened—in most cases to one-half or more—but after a time the cough got gradually worse, owing no doubt to the irritation set up by the dryness of the pharynx. The various inhalations—*i.e.*, turpentine, creosote, eucalyptus, etc.—all failed in these cases. The best remedy was undoubtedly the mistura ipecac cum scillæ of the Brompton Pharmacopœia:

℞ Potas. citrat., gr. xv;
Liq. ammon. acet., ℥ij;
Tinct. scillæ, m. xij;
Vin. ipecac., m. x;
Aq. anisi, ad ℥j.

But even this did not give very satisfactory results.

Here a note of warning is added about the inhalation of the vapor of creosote. In the treatment of "pure bronchiectasis," the inhalation of creosote vapor in most cases, curiously enough, stimulated the appetite, but the author noted that in cases of "tubercular bronchiectasis" the very opposite occurred, namely, that the appetite was seriously impaired in many cases, with disastrous results.

The same statement is made with regard to cases of "pulmonary tuberculosis," and the author asserts that he should be driven very hard indeed for a remedy in these cases until he would sanction the use of creosote inhalations, which seem to be coming into vogue at present, and strongly warns physicians against their use.

REMARKS ON THE MEDICAL TREATMENT OF CHOLELITHIASIS AND CHOLECYSTITIS.

The *Buffalo Medical Journal* for April, 1904, contains an article on this topic by STOCKTON. He holds strong views in regard to the questions at issue and states that while it is not only useless but reprehensible to delay the assistance which surgical intervention alone can bring to many cases, we are not yet in a position where it is proper to demand a cholecystotomy as soon as a diagnosis of gall-stones has been made. The

majority of cases can be greatly benefited by appropriate medical treatment, and many will completely recover by medical treatment alone. That which seems of the most importance in this medical treatment is the adoption of a regimen that will prevent the appearance of a lithemic condition, a state which experience teaches is likely to induce an irritable gall-bladder and precipitate a seizure of biliary colic. In other words, the patient should not be allowed to become constipated, to have scanty and acid urine, to develop gastric derangement, in which a coated tongue, disagreeable taste, flatulence, and epigastric distress are familiar symptoms. Such patients should be made to eat simply, drink freely of water, pay special attention to the activity of the skin, exercise moderately and progressively, avoid excesses of all kinds, and assist in the elimination of waste matters by a course of alkaline saline waters, with the judicious taking of some preparation of salicylic acid. The plan selected must depend somewhat upon the resisting power of the patient, the condition of the blood, and the viscera; and the physician who understands how to avoid the recurrence of bronchitis in one subject to uricacidemia will be likely to understand the best method of preventing an irritable gall-bladder. When the attack appears the spasm must be relieved, and for this perhaps morphine and atropine will be necessary.

When the pain is not intense it may be relieved and the attack aborted by the free administration of salol, sodium salicylate, aspirin, antipyrin, and similar preparations. The patient must be kept absolutely quiet, the alimentary tract emptied carefully without producing too much intestinal peristalsis, and food must be denied. The drinking of water and sweating the patient are useful measures, and in a few instances the administration of pilocarpine has for more than one reason seemed to be of value.

As to the use of olive oil in relieving the symptoms of irritable gall-bladder we have a good deal of recorded experience, and for the most part it is favorable. Some advise very large, others small, doses. The plan which seems to be most serviceable is to administer a teaspoonful of oil every two hours for several consecutive days. In case the oil leads to derangement of gastric digestion it should be abandoned.

COCAINE AND ADRENALIN.

In dealing with the action of local anesthetics H. Braun (*Berliner Klinik*, January, 1904) speaks chiefly of cocaine. Introduced in 1884 by Köller, this medicament has gradually gained a firm place in our list of therapeutic agents. Corning pointed out that any drug which possessed a marked affinity for the peripheral nerves must act powerfully on the heart and central nervous system, if it enters the circulation in concentrated solution. Cocaine is found to have a local toxic effect on all forms of protoplasm, and if it is introduced or obtains access into the circulation in sufficient quantities and sufficiently rapidly it exerts a general poisoning. It therefore follows that the slower it is absorbed from the point of injection, the more active it will be as a local agent. Constricting an extremity will be sufficient to alter a fatal poisoning into a mild one, and cooling the part, for example, with an ether spray, also delays the resorption of the solution. A more important means of delaying the absorption is found in the action of adrenalin. It has been found that mere traces (0.000000245 gramme of an extract of the gland per kilo, for a dog) will cause a rise in blood-pressure. The action of the suprarenal capsules depends on the contraction of the blood-vessels, by direct action on the contractile tissue of the vessels. It acts powerfully locally. Injecting solutions of adrenalin in strengths of 1 in 1,000,000 subcutaneously, the tissue becomes bloodless, and when stronger solutions are employed even arteries and veins of medium size scarcely bleed when cut through. Even large arteries can be almost completely contracted by the injection of strong solutions. Very small quantities of adrenalin with cocaine increase the local anesthetic action of the latter. In employing this combination for local anesthesia it is necessary to determine a safe dosage. On the mucous surface the drug does not act toxically; Doenitz found that ½ mgr. of adrenalin in a solution of 1 in 2000 could

be injected into the subdural sac of human beings without ill effect. Subcutaneous injections, however, have to be carried out with great caution, and in order to fix a safe dose Braun experimented on himself; 0.0005 gramme in solution of 1 in 1000 produced general symptoms. Five minutes after the injections he felt a sense of oppression on the chest, palpitation, and had to lie down. These symptoms passed off in one and a half minutes. The drug produced less effect on Doenitz. If one injects ½ mgr. of adrenalin with cocaine, the patient may feel a tightness of the chest, but this passes off without any further symptoms.

Braun recommends using the solution of adrenalin in a dilution of 1 in 10,000, and points out that very weak solutions of cocaine will have the same anesthetic effect if combined with the adrenalin as strong solutions without it. One has to be careful in using the mixture to avoid the occurrence of secondary hemorrhage. If the adrenalin acts strongly, even large vessels may be firmly contracted, and may escape the notice of the surgeon. If they are not ligatured, they will naturally bleed later. It is therefore necessary to plug the wound or to seek every vessel of any size, before closing it. Care has to be used, too, with cocaine when introduced into the bladder, as a one-per-cent solution may give rise to alarming symptoms. The addition of adrenalin to very weak solutions of cocaine will be found advisable.

Braun describes the method which he employs for anesthetizing the female urethra. He dips a plug of cotton into one cubic centimeter of a one-per-cent solution of cocaine, to which three drops of a 1-in-1000 solution of adrenalin have been added, and swabs out the urethra with this. For infiltrating according to Schleich, he finds that a solution of cocaine of 0.01 per cent, with 3 to 5 drops of adrenalin solution (1 in 1000) to each 100 cm. added, is absolutely sufficient. He points out that an inflamed region should never be directly infiltrated, but one should always make a circular infiltration. The same solution can be used for Oberst's method of injecting into the subcutaneous tissue in the neighborhood of nerve trunks, for anesthetizing a finger and the like. For extraction of teeth he recommends 0.01 to 0.015 gramme of cocaine in from 1 to 2 cubic centimeters of saline fluid, with the addition of from 2 to 5 drops of adrenalin in solution. Half of this is injected behind the tooth and half in front of it, about the level of the fang, and as near the periosteum as possible. The condition of the tooth may be as bad as possible; with this injection one will be able to extract it without pain. Lastly, he mentions Doenitz's experiments with intradural injections of one cubic centimeter of adrenalin (1 in 1000), to be followed by 0.0075 to 0.015 gramme of cocaine. The anesthesia is said to be very satisfactory after this method, and no ill effects were noted.—*British Medical Journal,* March 26, 1904.

THE NECESSITY OF A KNOWLEDGE AMONG GENERAL PRACTITIONERS OF THE DIAGNOSIS AND TREATMENT OF GLAUCOMA.

Roosa in the *Medical Review of Reviews* of March 25, 1904, says when the eyeball is in a state of increased tension, so that it is sensibly hard by comparison with normal eyes to the fingers placed on the closed lids, there is either primary or secondary glaucoma. In addition to this chief symptom, which, even if no other objective one exists, marks the disease as glaucoma, will generally be found a redness of the eyeball in the circumcorneal region, a dilated pupil, a watery eye, and perhaps very great deterioration of vision, with failure of accommodation. In addition to this there may be an important subjective symptom—a halo around lights. This halo is probably dependent upon changes in the corneal epithelium. Rainbow colors, seen especially about a candle flame or the like, are a subjective symptom, but a very suspicious and alarming one. If we add to the picture the very important fact that patients generally suffer severe pain of a neuralgic character, and that the eye is suffused and the lids perhaps swelled, we have the disease acute glaucoma, which ought at once to receive operative attention. If the diagnosis be promptly made by the general practitioner, the means are at hand to arrest the progress of the disease until the specialist can perform the sight-saving operation. It is a great misfortune that

attacks of glaucoma or increased tension of the eyeball are often overlooked. Sometimes the acute symptoms, and apparently all the symptoms, subside. But really only the severe pain, so often called "neuralgia of the eye," the circumcorneal redness, the swelling of the lids may have disappeared, while impairment of vision, increased tension and cupping of the optic disk remain, so that before the next acute attack the disease has made an insidious progress, which lessens the chances of cure.

This is the condition for which Graefe proposed, and first of all the world successfully tried, iridectomy. The condition remains curable to this day. It has only been the extension of the treatment to the chronic form of glaucoma that has brought iridectomy for glaucoma into disrepute. Perhaps to say "into disrepute" is strong language, but, at least, into a very doubtful idea as to its efficiency in many cases of increased tension of the eyeball without acute symptoms. This doubt is well placed. Iridectomy in chronic glaucoma has none of the efficacy that obtains in the acute form of the disease. Hemorrhagic glaucoma, which occurs sometimes in the course of chronic Bright's disease, even in the acute form, forms another of the exceptions where iridectomy is interdicted. But it often becomes necessary in chronic glaucoma, when the sight is lost, and there are occasional subacute exacerbations, with troublesome symptoms—of halo about lights, and uncomfortable sensations of varied kinds in the eye, besides the pain—to do something to relieve these symptoms. Operations then are often worse than useless. In the writer's opinion it is very bad practice to operate, in any way, upon a sightless glaucomatous eye, with a hope of relieving pain, except to remove it or its anterior portion. It is in these inoperable cases, a diagnosis having been made, that eserine first of all, cocaine and pilocarpine next, may play the very important part of arresting the acute symptoms until the specialist comes in. But if the disease be mistaken for iritis or simple neuralgia, and atropine or any other mydriatic be used, a few hours may suffice to put the case beyond hope. Here, as in acute glaucoma, the myotics or tension depressors may play a very important part. In acute tension the myotics are used until iridectomy can be performed. In sightless eyes they are also used, although the operation should not be performed, because no operation but enucleation of the eyeball offers anything for the relief of the pain. The applications to the eyes of myotics, either pilocarpine or cocaine, or best of all eserine, and as recommended by Panas, in oil, often afford an efficient remedy. The use of eye-drops in oil has long been known and practiced, being first recommended in this country by Andrews and Green. But it is believed that no systematic attempt to use oily solutions of eserine in large doses, two or even four grains to the ounce, and for the purpose of reducing the tension and relieving the pain in operative glaucoma, had been made until the advice was given to do so by Panas. Some cases are reported by Panas where he thought an operation was indicated—cases of chronic glaucoma, with acute exacerbations, where the use of strong oily solutions of eserine, although intended to be employed temporarily, effected a cure.

In conjunction with some of his colleagues in New York, among others Drs. Emerson and Irwin, the writer has given this means of treatment a fair trial, and thinks it ranks among the best for inoperable cases of glaucoma, and in chronic glaucoma he is rather inclined to increase the field of inoperable cases than to diminish it. He thinks the claim is a just one that these oily solutions are more rapid in action and more durable in effect. They are employed three to four times in twenty-four hours, and followed by fomentations of water for, say, twenty minutes.

This subject will not be at all complete unless another great danger in making a false diagnosis in glaucoma is dwelt upon. While mydriatics, especially atropine, will save cases of iritis and keratitis, and be of no damage whatever in choroiditis, in glaucoma they are of the greatest harm, and may even excite the disease when it has not before existed. The general practitioner ought, for this reason, among the many others, to be able to diagnosticate glaucoma, lest he aggravate the conditions by dropping atropine in an eye having the prodromal symptoms of glau-

coma, or even induce it in a suspicious case. While atropine is one of the very best remedies, of the widest usefulness in ophthalmology, it is of the greatest harm in glaucoma, as may be many mydriatics.

THE TREATMENT OF HEMOPTYSIS.

FRANCIS HARE in the *Australasian Medical Gazette* of February 20, 1904, reminds us that in the last of a series of papers on the mechanism of the paroxysmal neuroses, published in the *Australasian Medical Gazette* for October, 1903, he referred incidentally to the treatment of hemoptysis by inhalation of amyl nitrite—a method of treatment deduced from the physiological principles of the circulation, systemic and pulmonary. Two illustrative cases were given. In the first, hemoptysis occurred in a man suffering from mitral insufficiency, and was proximately due to cutaneous vasoconstriction from chill. The administration of one capsule of amyl nitrite by Dr. C. S. Hawkes terminated the bleeding instantaneously. In the second, two attacks of hemoptysis occurred on the same day in a phthisical subject, and in both the bleeding was instantaneously stopped by the same drug. Manifestly in phthisical hemoptysis there is in operation one of the most highly vicious circles in pathology—a circle which is largely responsible for the profuseness and continuance of the hemorrhage. The intrapulmonary irritation of the effused blood causes cough; each act of coughing, like any other sudden exertion, raises the blood-pressure; each rise of blood-pressure is apt to induce fresh hemorrhage; and so on, the circle continuing to revolve in many cases until the loss of blood has been sufficient to reduce the blood-pressure materially, and thus terminate the hemorrhage. This natural cure of hemoptysis was at one period in the history of medicine imitated by physicians who resorted to venesection in this emergency, a somewhat expensive but by no means irrational imitation. The treatment by amyl nitrite is another imitation, less complete than venesection, but much more economical. The vicious circle is broken through at the same point and by similar means, namely, reduction of the general blood-pressure; but the blood is saved instead of being lost; consequently the procedure may be repeated as often as is necessary.

The point at which the vicious circle is broken through is of the greatest importance. Too often, the writer believes, he has yielded to the temptation to smother the cough by a hypodermic injection of morphine. The resulting cessation of cough tends undoubtedly to the cessation of hemorrhage, but the blood already effused is retained, decomposes inevitably, and not rarely induces septic pneumonia, high temperature, and prolonged exhausting illness, which may end fatally. This is the history of so many cases which seemed under open-air treatment on the road to recovery that the author had come to regard hemoptysis as a grave misfortune; but if amyl nitrite proves efficient as a hemostatic, the hemoptysis of phthisis will be largely freed from its subsequent as well as its immediate dangers, for the action of the drug is a safeguard against retention. It is the influx of blood to the ulcerated lung tissue, not the efflux from the air-passages, which is checked, and the uninterrupted continuance of cough assures the rapid evacuation of blood already effused. In none of the writer's cases, so far as could be ascertained, was there any retention of blood; in none of them certainly was there the least subsequent additional rise of temperature or other complication.

DIET IN TYPHOID FEVER.

The *Intercolonial Medical Journal* of February 20, 1904, contains an article on this subject in which HERRING strongly advises more food for these cases. Ten years ago it was taught that the typhoid fever patient should be fed on milk and beef tea; that if the milk disagreed, it was to be peptonized, and the beef tea withheld if there was any diarrhea. In other words, only a starvation diet was allowed. It is believed that at the present time every school of teaching in London lays down the law of getting the greatest amount of nourishment possible into the typhoid patient, and the dietary is something as follows: Water, milk, beef tea, broths, soups (cooked with vegetables), coffee, cocoa,

lemonade, soda water, lemon drinks, squash, orange juice, beer, egg-flip, and "pap" foods and jellies in variety.

That the advantages of this change have not been generally realized by the profession is shown by the common adherence to the old diet.

It is argued by some that the typhoid patient has no taste; that milk and beef tea are good, safe foods, and easily prepared. The logic is faulty, for a typhoid patient should not be allowed to lose his taste—that is a sign he is doing badly; and if he be fed on a mixed diet from the start, he will not lose his appetite, but will relish his food. Further, milk in a hot climate is the most unreliable of foods, and may be so disliked as to be positively harmful. More than one patient has been observed to vomit milk while taking other things well.

Liquid diet is in common use. But it is when one gives so-called solid food that one may expect to be called upon for authority. The writer therefore gives us Dr. Hutchinson, an eminent authority upon dietetics. Why should not typhoid patients have solid food? What is the difference between a solid food and a liquid food? Surely a solid which is soluble only needs solution to become a liquid. All food practically becomes liquid in the ileum, where the typhoid ulcers are. Why then should the patient not have soluble solids? One often hears a youngster refuse liquid food, and ask for "something to bite." Why should he not have it? The only need is to see that it is soluble, and if one follows the old maxim of avoiding "strings and stones and skins and bones" one is not far out. For instance, take a banana—three-quarters of it is water and the other quarter nearly all sugar, but it contains also 1½ per cent of proteid, 1 per cent of mineral matter, and something over ½ per cent of extractives, and only 1-5 per cent of cellulose, which is the only ingredient which could be imagined to hurt the ulcers.

Seven years ago, when resident surgeon to the Ballarat Hospital, the writer demonstrated very satisfactorily by a series of consecutive cases that typhoid patients could take tripe and bananas as a regular dietary, in addition to a varied liquid diet, with advantage. He has given them when obtainable to all cases since, or has given fish or rabbit instead, and has never had reason to regret so doing. In fact, he claims that patients will do better on such diet than on any restricted diet. "Something to bite" is not longed for, but they imagine themselves better than they are, and keep up their spirits accordingly.

The real test of treatment is the final result—the capacity for work in the patient. It is here the benefits of the varied dietary are seen. The patient is physically and mentally stronger all through his illness, and although the course of the disease may not be shortened, yet complications and sequelæ, such as faintings, collapse after bath, and other calls for stimulants, delirium, thrombosis, abscess, bed-sores, etc., are practically banished, while the more alarming complications of hemorrhage and perforation are in no way increased. The patient, in fact, gets up a convalescent instead of a wreck, and he will return to work in two or three weeks, while the milk-and-beef-tea patient will wait three or four months.

PRIMARY CARCINOMA OF THE APPENDIX.

NORRIS (*University of Pennsylvania Medical Bulletin,* November, 1903) reports a case of primary carcinoma of the vermiform appendix which was accidentally discovered during a pelvic operation on a woman twenty-seven years of age.

In nearly 60 per cent of the reported cases of cancer of the appendix there has been a definite history of previous attacks of appendicitis. The cases have been observed in patients varying in age from fifteen to fifty years, 65 per cent of the cases being observed before thirty. About 75 per cent of the cases reported occurred in females.

Pain is the chief symptom, and in moderately early cases it is usually of a dull, aching character, situated in the right iliac fossa. Tenderness was present in 71.4 per cent of the cases, and rigidity in 28.5 per cent. Fever and rapidity of the pulse is due, probably, more to coexisting inflammation than to the carcinoma itself. The tumor is rarely if ever palpable as such, though a mass is not infrequently present.

Loss of weight, cachexia, hematochezia, and low hemoglobin usually are found late in the disease and after the growth has involved the surrounding structures. Adhesions are frequently present in these cases. Fecal constrictions and strictures are not uncommon.

In some instances the carcinoma has been described as a tumor the size of a walnut, in other cases the size of a bean or pea, while in many cases no new growths could be demonstrated macroscopically. The carcinoma is situated usually near the tip; in about 15 per cent of the cases it was found near the base. In some cases the organ is the seat of acute suppuration or necrosis, in others it is the seat of catarrhal inflammation, while in still others little or no gross change can be seen. The similarity of the symptoms to those of appendicitis makes the diagnosis very difficult; fortunately, the treatment is the same in both conditions.

ANEURISM OF THE HEPATIC ARTERY.

KEHR (quoted in the *Journal of the American Medical Association*, Nov. 28, 1903) reports a case of aneurism in the right branch of the hepatic artery which necrosed and communicated with the cystic duct. The artery was tied with double ligatures and severed between them, immediately below the bifurcation. The aneurism, which was the size of a goose-egg, was exposed and cleared out. A tampon was then introduced. No other lesions were discovered. The patient made a good recovery, and there was no evidence of hepatic necrosis subsequent to the operation. Kehr suggests that symptoms of gastric or intestinal bleeding, with colic and icterus together, should lead to a suspicion of the possibility of aneurism of the hepatic artery.

CANCER OF THE STOMACH—OPERATIVE TREATMENT.

Basing his statements upon the statistics of cases of cancer of the stomach published by Krönlein and Mikulicz, MOYNIHAN (*Practitioner*, December, 1903) states that the results in cases of gastric cancer will be improved when exploratory operation is undertaken not to confirm but to make a diagnosis. If after exploration a growth is found to be obstructing the pylorus, or to be narrowing the stomach and causing an hour-glass condition, or if stasis of food has been a marked symptom, then gastroenterostomy will give very decided relief. If, on the other hand, the growth be confined to one or other of the curvatures, and if neither stenosis nor stasis be present, gastroenterostomy will give little or no relief; it will not prolong life nor give a greater degree of comfort.

The operation of gastrectomy in the hands of Mikulicz and of Carle and Fantino has given a lower mortality than gastroenterostomy. Its advantages as compared with gastroenterostomy are that it gives greater prolongation of life—ten or eleven months longer—and that it affords a greater degree of comfort to the patient. Though recurrence may follow, yet in the majority of cases the patient is relieved greatly by the removal of a foul, ulcerating growth, from the surface of which an offensive and septic discharge is constantly occurring, and from which hemorrhages more or less copious are often likely to take place. In the great majority of cases the growth will recur either locally or generally, but the question may arise as to whether gastrectomy should not be performed deliberately as a palliative operation even in cases where an early secondary deposit can be seen in the liver, or inaccessible or irremovable glands be found in the pancreas or along the aorta and vena cava. Gastrectomy possesses the following advantages as compared with gastroenterostomy: that in the most competent hands its mortality is not greater, but is even less, than the mortality of gastroenterostomy; that a prolongation of life for ten months longer than the period given by gastroenterostomy is the rule; that the comfort, the general health, the appetite, and the well-being of the patient are all emphatically better; and finally, that the patient has always a chance, even though it is of the slenderest, of a complete recovery from his disease. If all these are taken into consideration, there can be no doubt that the operation of choice will always be gastrectomy.

If, after the abdomen has been opened, it is found impossible or imprudent to attempt either gastroenterostomy or gastrectomy, some relief may be obtained by

performing duodenostomy or jejunostomy. The scope of these procedures is very strictly limited, but in rare instances, when the prolongation of life for even two or three weeks is of the greatest importance, then either of these operations can be done with propriety. The operations are simple, speedily done, and cause little or no shock, and they can, if needful, be readily performed with cocaine anesthesia.

CBSTIPATION DUE TO OBSTRUCTION BY THE RECTAL VALVES.

MARTIN (*American Medicine,* Dec. 5, 1903) reports forty cases of valvular obstipation, all of which were operated upon two years or more ago.

The symptoms of hypertrophy of the rectal valve were very similar in all the cases. The patient is the subject of more or less chronic obstipation. He makes frequent partially successful attempts at defecation daily, and may experience an unrequited desire for stool. The patient acquires the reprehensible physic habit. At times the periods of obstipation are interrupted by periods of diarrhea. There is an ineffectual straining at stool, except for fluid feces.

Discharge of mucus is usually noticed. Later the diarrhea may occur with greater frequency. These symptoms may be accompanied by increasing degrees of flatulence and borborygmus, and from time to time the patient is subject to attacks of intestinal autointoxication, and finally he becomes neurasthenic.

On account of the non-sensitiveness of the rectal valve, the patient's sufferings are not commonly referred to this region. Symptoms of pain, aching of the iliac regions, backache, sciatica, hemorrhage, catarrhal and membranous proctocolitis, prolapse, hemorrhoids, fistulæ, etc., may be the sign of complications of the obstructing valve. Ultimately, symptoms of intestinal obstruction may become pronounced, and if the patient be unrelieved, the disease proceeds to a fatal termination.

Operation in these cases consisted of division of the hypertrophied valves. Two of the forty patients were not improved; one of these two cases had no complication, but the other was subject to recurrent invaginations of the sigmoid into the rectum. Five of the patients were improved, and six suffered from a recurrence of obstipation. The remaining thirty-three were cured.

Valvular obstipation may recur by reason of the development of hypertrophy in the valve which was not diseased at the time of operation.

LUPUS TREATED BY LOCAL APPLICATIONS OF TURPENTINE.

During the past year HOY (*Cincinnati Lancet-Clinic,* Dec. 12, 1903) has treated several cases of lupus with local applications of turpentine. Picric acid gauze or cotton was employed to keep the ulcer moistened with the turpentine. The lesions healed rapidly and satisfactorily in every case and have not recurred.

TRANSPLANTATION OF THE BICEPS TENDON FOR PERSISTENT CONTRACTION OF THE KNEE-JOINT.

MOULLIN (*British Medical Journal,* Dec. 19, 1903) reports the case of a woman thirty years of age, who suffered from contractures of both knees, due to subacute rheumatoid arthritis.

Weight extension was placed upon the legs, as the knees were contracted almost to a right angle; but after two months' trial the angle of flexion was scarcely lessened, and the hamstring tendons were as tense as ever.

Transplantation of the insertion of the tendon of the biceps, from the flexor to the extensor side of the joint, was then advised, in the hope that, by weakening one and strengthening the other, the balance of power might be restored and that the knees might be straightened and kept from recontracting.

An incision was made on the outer side of each limb, the tendon detached from the fibula, the quadriceps exposed, and the tendon of the biceps passed through a slit made in it, so that it lay upon the anterior aspect. A few sutures were passed through the two tendons to secure them, and the knees were fixed in their contracted position until the wounds were healed. The same weight extension that had been used without the least effect before was applied again, and the knees

began to straighten out at once. Eighteen months have elapsed since operation and there is no recurrence of the contractures. The patient is able to stand without support and walk about sufficiently to perform her ordinary household duties.

The operation is so simple and devoid of danger, and has succeeded so well in the present case, that the author believes it might be performed with advantage in other cases of contraction of the knee-joint, which persistently and obstinately relapse, whether arising from rheumatoid arthritis or other causes.

ANEURISM OF THE LEFT SUBCLAVIAN ARTERY TREATED BY WIRING AND ELECTROLYSIS.

DALAND (*Pennsylvania Medical Journal,* December, 1903) reports a case of aneurism of the left subclavian artery in which twenty feet of gold wire was introduced into the sac through a hollow needle, and a galvanic current, gradually increasing from one to eighty milliamperes, was employed for about 110 minutes. The pulsation and size of the tumor temporarily decreased and afterward increased, and death occurred on the twentieth day after operation, due to exhaustion produced by long-continued pain, and hastened by the formation of a thrombus in the left common carotid artery, caused by the pressure of the aneurism. The necropsy showed a cocoanut-shaped aneurism involving the entire length of the artery. Its cavity was occupied in large part by a clot in varying stages of organization, through which the wire was well distributed.

In discussing this case the author states that this operation is worthy of trial when medical treatment fails, and that the percentage of success will be greatly increased if the operation be not performed as a last resort.

The local increase of blood-pressure after the operation indicates the need for measures producing hypotension, such as absolute rest, low diet, diminished quantity of liquid, avoidance of excitement, venesection, nitroglycerin, or the nitrates. Gelatin should be employed regularly to increase the coagulability of the blood. These measures should precede the operation by at least a week, and should be continued after the operation for not less than two weeks.

DEPRESSED FRACTURE OF THE SKULL —OPERATIVE TREATMENT.

NICOLL (*British Medical Journal,* Dec. 19, 1903) reports six cases of depressed green-stick fracture of the skull. The fracture occurred during birth in four of the cases and during infancy in two. The oldest patient was four years of age at the time of operation.

The operation was similar in principle in all the cases—namely, inversion of the depressed area of bone. The scalp and pericranium were reflected in one layer; the depressed portion of the skull was cut out by a trephine (1½ to 2½ inches in diameter), inverted on the dura mater, and fixed in position by suture over it of the replaced scalp and pericranium.

The result in five of the cases has been complete correction of the deformity, and in the sixth only partial correction, due to the fact that the trephine available was not sufficiently large to include the entire area of depression.

At the end of one week, when the scalp sutures were removed, the inverted disk of bone was in all six cases found to be firmly united with the skull.

NEPHROPEXY.

GOELET (*Annals of Gynecology and Pediatry,* December, 1903) performs nephropexy in cases in which the kidney is prolapsed to the third degree, viz., when the kidney has descended below the border of the lowest rib in front, and the upper pole can be palpated when the patient is in the erect position, because it is an anomalous condition that should not exist and is not conducive to either health or comfort. This position of the kidney interferes with its circulation and function and with the flow of urine from the kidney, and by compression of the ovarian vein, which it overlaps, gives rise to pelvic disease.

The author exposes the kidney by a vertical incision along the outer border of the erector spinæ muscle, the muscles being separated in the direction of their

fibers; the fatty investment of the kidney is opened by a vertical incision near the spinal side of the wound, and the kidney is delivered through the incision upon the surface of the back. The fatty capsule is completely detached upon both the anterior and posterior surfaces, care being taken to detach the colon completely. The redundant fatty capsule is trimmed off on both sides. The fibrous capsule of the kidney is not disturbed. The sustaining sutures, two in number, are inserted only under the fibrous capsule, each having three insertions through and under the fibrous capsule, and the ends are brought out through all the structures of the back at the upper angle of the incision in the skin and are tied over a fold of gauze to avoid cutting through and loosening of the loop.

The suture material used is silkworm-gut, and the sutures are removed after three weeks. The parietal wound is closed by two layers of catgut sutures. A gauze drain, which is retained for forty-eight hours, is inserted around the lower pole of the kidney and brought out through the lower angle of the wound. The chief reasons for failure of nephropexy are postponement of the operation until the kidney is seriously disabled or an incurable pyelonephritis has developed, or until the health of the patient is permanently shattered; failure to completely detach the colon from the kidney, which may drag the kidney away from its anchorage or give rise to annoying pain; failure to immobilize the kidney until it can become permanently adherent by employing absorbable sutures or by attaching them insecurely to structures that yield to the constriction when it is tied; and fixing the kidney too low down, where it will be irritated by the pressure of corsets or clothing constricting the waist.

The author concludes with a record of 159 nephropexies by the method he describes on 126 patients, in 33 of whom both kidneys were fixed at the same time, without a death and without a single failure to secure permanent fixation. The ultimate results were cure of the symptoms and conditions depending upon the prolapse in all the cases he has been able to trace, for a period of from two to twelve months after the operation.

LARYNGEAL COMPLICATIONS OF TYPHOID FEVER.

DUPUY (*New York Medical Journal and Philadelphia Medical Journal,* Dec. 26, 1903) reports a case of laryngeal complication during the course of typhoid fever, and has collected thirty-four other cases since the publication of Keen's statistics on 221 cases published prior to 1896.

Landgraf's estimate, based on all known statistics, places typhoid affections of the larynx at 11 per cent of all fatal complications, Griessenger at 26 per cent of all his fatal cases, and Luning estimates it at 3 per cent from clinical statistics and 17 per cent from post-mortem examinations.

Pathologically these affections may be grouped into three varieties: (1) Submucous laryngitis; (2) ulcerative laryngitis; and (3) laryngeal perichondritis. Practically, it is difficult to separate these forms, as one may overlap the other. Edema in this class of cases, being of inflammatory origin, exists only with either of the above forms.

Necrosis of the cartilages resulting from perichondritis is by far the most common form of laryngeal complication; the cricoid, and next to it the arytenoid, being most commonly involved.

Ulcerations appear next in frequency and may be either specific or non-specific in type. The true typhoid ulcers are excavated, with infiltrated areas surrounding them, and are especially productive of profound tissue changes. The non-specific ulcers, due to secondary infection by any of the pyococci, are superficial lesions, only slightly undermined, with no surrounding infiltration, and cause only slight damage to the parts. Specific typhoid ulcers show a marked predilection for the posterior laryngeal surfaces. The typhoid lesions occupy the adenoid areas normally distributed in the larynx and present true typhoid alterations, identical with those in the intestines.

Not a few cases have been reported in which the epiglottis was alone the seat of ulcerations. Laryngeal paralysis has been reported in twenty cases. It occurs principally during convalescence, the abductor muscles bearing the brunt of the involvement. In the more severe

typhoid affections of the larynx, the diagnosis is suggested readily by the overshadowing clinical feature of dyspnea, suffocation. The laryngeal invasion occurs in the most insidious manner, a milder grade of inflammation being followed suddenly by a stenosis, which means a struggle with death. The onset is usually late, about the third week, frequently in convalescence.

In the milder forms of inflammation, steam inhalations of menthol in compound tincture of benzoin, or spraying with menthol and liquid albolene, sucking pellets of ice, and the ice-pack over the neck, might prove efficient treatment, but when stenosis sets in tracheotomy offers in most cases the only hope. It is especially indicated in necrosis of the cartilages, in which the mortality without operative interference is 95 per cent. Analysis of twenty-six cases shows that in ten recoveries nine were operated upon. In the sixteen fatal cases only four were operated upon.

Intubation is hardly applicable. In perichondritis or necrosis, by interfering with the escape of pus and the necrotic tissue, it would prove worse than useless. In two cases it was practiced with success only in one instance—a case of complete abductor paralysis.

Luning's statistics show that of sixty cases recovering after typhoid perichondritis, eleven dispensed with the cannula in periods varying from seven months to six years; the other forty-nine wore the cannula permanently.

CENTRAL NEUROFIBROMATOSIS.

Neurofibromatosis consists in the formation of tumors (single or multiple) on one or more cranial nerves. According to FRAENKEL and HUNT (*New York Medical Record,* Dec. 26, 1903) the acoustic nerve is most frequently thus affected, and next in order the trigeminus. The fibromatous growths of the acoustic are of rounded form, varying in size from a cherry to a hen's egg, of fibrous consistency and distinctly encapsulated. The surface is nodular and irregular. Care in the examination will usually demonstrate their attachment to the atrophic nerve trunk. A small remnant of the nerve trunk, a few blood-vessels, and loose meningeal adhesions form the only connections of the tumor with its surroundings; hence it may be lifted with ease from its attachments, leaving a corresponding excavation in the structures composing the ponto-medullo-cerebellar space. Histologically the tumors are neurofibromata. Very commonly in the more advanced stages the growth assumes a sarcomatous nature.

The essential feature distinguishing these tumors from those originating within the substance of the brain-stem or cerebellum is the early appearance of symptoms referable to a single cranial nerve. These, because of the benign character and slow growth of the tumors, may precede for a considerable time any other focal or general symptom. Tinnitus aurium with progressive diminution of hearing and attacks of Ménière's syndrome (aural vertigo) will prove points of diagnostic importance in connection with the eighth nerve, and obstinate and atypical attacks of facial neuralgia in connection with the fifth nerve. Even in the advanced stages the affected nerves still preserve some of their functions.

With the increase in the size of the tumor, the neighboring parts, pons cerebellum medulla, and basal nerves show evidences of pressure; peduncular ataxia, tendency to fall or deviate to the same or the opposite side, cerebellar ataxia, nystagmus, irregularities in the size and reaction of the pupils, paralysis of associated movements of the eyeballs, dysarthria, dysphagia, homo- and contralateral and crossed paralyses of the extremities, paralysis of the facial or abducens of the peripheral type, motor disturbances of the palate or tongue, circulatory, respiratory and vasomotor phenomena, and attacks of Adam-Stokes's syndrome.

From the standpoint of differential diagnosis the chronological relation of the neural symptoms to the general symptoms, the relative intensity of the neural and the other central symptoms, are determining factors.

Owing to the proximity of vital centers these tumors share the fatal prognosis with other severe lesions in this locality.

Removal of the growth by operative

procedures offers the only hope of cure. Because of the loose attachment of these tumors to their surroundings it may be expected that in spite of the unfavorable location a perfected surgical technique will improve the prognosis.

MANUAL COMPRESSION OF THE HEART FOR CARDIAC FAILURE DURING CHLOROFORM ANESTHESIA.

SICK (*Centralblatt für Chirurgie,* No. 36, 1903) reports a case of sudden cardiac and respiratory failure in a fifteen-year-old boy, during an operation for tubercular peritonitis, under chloroform anesthesia. Except for an early momentary return of respiration and faint heart sounds, artificial respiration and massage over the heart were employed for a half-hour without any effect.

Artificial respiration was continued, and the heart was exposed fifteen minutes later by resecting a portion of the chest wall. Direct rhythmical compression of the heart for fifteen minutes was followed by one feeble cardiac contraction. Continued manual compression and the application of hot compresses to the anterior surface of the heart for another fifteen minutes resulted in strong, regular cardiac pulsations.

The patient recovered consciousness two hours after the completion of the operation, but finally died about twenty-four hours later.

THE INDICATIONS FOR THE LIGATION OF THE INTERNAL JUGULAR VEIN IN LATERAL SINUS THROMBOSIS.

The indication upon which OPPENHEIMER (*New York Medical News,* Dec. 26, 1903) feels justified in opening the jugular previous to operation upon the mastoid is the presence of septicemia or pyemia, as shown by the general condition of the patient, especially by the presence of a high temperature with rapid remissions, even to subnormal, with return of high temperature within a few hours. Metastases of the septic material clearly indicate immediate ligation of the jugular, followed by the usual operation upon the purulent collection at its source. Occipital edema, swelling of the eyelids of the corresponding side, and neuroretinitis indicate involvement of the jugular, while tenderness in the neck, with the presence of a cord-like sensation to the fingers of the surgeon, is undoubtedly the most reliable local symptom, and when present absolutely indicates ligating and removing the diseased vein before the mastoid is explored.

In those cases in which the sinus has been exposed, but not opened, the ligation of the jugular should precede further operative procedures in the direction of the sinus when the presence of a clot has been determined by the usual methods, and aspiration shows that the lower portion is beginning to disintegrate. This is indicated even more forcibly when septic symptoms of even a minor degree are present, although no emboli have entered the circulation.

Ligation of the jugular, after exposure of the sinus, is indicated also in the cases in which the movements of respiration are transmitted to the sinus; the dangers of embolism of air under these conditions, and the implied presence of a thrombus entering well into the torcular, warranting the immediate ligation of the vein in the neck before the sinus is opened. If, after exposing the sinus, the wall is seen to be ulcerated, and broken-down débris is contained in the vessel, it is advisable to stop operation in that direction and ligate the jugular before removing the diseased tissue.

If the jugular is tied high up and does not contain a thrombus, no further interference will be necessary, but if the thrombus has extended downward, or if phlebitis be present, a second ligature should be placed lower down and the vein removed.

From the local symptoms it is not always possible to ascertain that the jugular is infected, as there may be swelling of the neck and even tenderness along the jugular, which may be due to pathological changes in the lymph glands. Enlargement of the cervical lymph glands and infiltration of the soft tissues are, however, valuable signs indicative of phlebitis and thrombosis of the internal jugular, the condylar, and the deeper veins of the neck. This infiltration often undergoes purulent inflammation.

Ligation should be performed also in the cases in which a large thrombus fills

the sinus and extends down into the vein, though neither septic nor disintegrating changes be present.

Ligation is perfectly justifiable even if the presence of a thrombus in the upper portion of the jugular is not recognized, whenever it is impossible to produce a free flow of blood after the sinus has been evacuated as thoroughly as possible.

VARICOCELE—OPERATIVE TREATMENT.

In mild cases of varicocele, not causing pain nor other disturbances, a suspensory is all that is needed, but when symptoms demand a more active treatment VISCONTINI (quoted in the *Journal of the American Medical Association,* Nov. 14, 1903) believes that the Parona operation will give results superior to all others. The testicle is detached from the tunica vaginalis, the enlarged veins are buried in the turned-over vaginalis, and the latter is fastened at the outlet of the inguinal canal. The patient can be dismissed in fifteen days. This method has been employed in forty-one cases, and the results have been perfectly satisfactory in all, with no further necessity for wearing a suspensory.

RUPTURE OF THE QUADRICEPS EXTENSOR TENDON.

In 1896 Walker added 141 cases to the 124 cases of rupture of the quadriceps extensor tendon tabulated by Maydl. To these cases NORRIS (*University of Pennsylvania Medical Bulletin,* December, 1903) is able to add 38 more, making a total of 303 cases.

Walker gives a total of 41 cases which were operated upon, of which 35 were complete cures; in the remaining six the result was not stated. Of 27 cases collected by the writer in which the tendon was sutured there were 27 complete cures. The average length of time required in operative cases for the recovery of the full use of the leg is about eight or nine weeks, while in those not operated upon the recovery has been much slower. There have been no fatalities reported following operation.

The usual cause of the rupture is a sudden strong contraction of the quadriceps muscle while the leg is slightly flexed. The rupture is commonly at or near the patella either above or below. A tear at the patellar attachment opens the capsule of the knee-joint. Following the injury there is loss of extension power, rapid effusion into the joint, preternatural mobility of the patella, and a depression at the point of rupture, varying in extent with the amount of separation of the ends of the tendon. The injury may be confounded with fracture of the patella, or a severe contusion of the knee-joint, but after the subsidence of the acute inflammatory effusion its nature may be readily diagnosed.

Non-operative treatment is practically the same as for fracture of the patella, and may be employed in those cases where the rupture is incomplete. Operative treatment consists of exposing the divided ends of the tendon and uniting them with some suitable suture, and following this by fixation of the knee-joint, with the leg extended. Massage and passive motion should be begun about two or three weeks after the operation. Operative treatment affords the best prognosis.

DYSMENORRHEA AND STERILITY DUE TO STENOSIS OF THE CERVIX TREATED BY INCISION.

When the symptoms of dysmenorrhea and sterility exist separately they may be due to many causes, but when associated FENWICK (*Medical Press,* Dec. 23, 1903) believes they result most frequently from a congenital or a traumatic constriction of the canal of the cervix uteri.

However acquired, there is thereby produced a definite mechanical obstacle to the egress of menstrual blood and the ingress of seminal fluid. All gynecologists have seen examples of traumatic stenosis, where after a difficult labor a woman has, perhaps for the first time, commenced to have severe menstrual pain and has not conceived again. Examination reveals a hard cervix with a small, contracted orifice, while inspection shows dense cicatricial tissue where labor has evidently lacerated the cervical lips.

The type of congenital stenosis is found in the condition known as "conical cervix." The cervix is abnormally long, often measuring an inch to an inch and a half, or even more. It tapers down-

ward, and the external orifice is almost invariably so small that it has been designated the "pinhole os." It is often impossible to pass an ordinary uterine sound through the opening, and when a surgical probe is introduced it is found to be tightly gripped along the whole length of the cervical canal. In these cases the dysmenorrhea usually begins one or two hours before the menstrual flow, and becomes gradually worse until the flow ceases.

Operation affords the best result in the treatment of these cases. The patient being anesthetized and in the lithotomy position, the vagina is well douched and cleansed, the posterior wall of the vagina is retracted by a speculum, a double hook is passed through the anterior lip of the os, and the cervix is drawn down. The cervical canal is dilated by graduated metal sounds up to No. 16, one blade of the scissors is passed half-way up the cervical canal, and an incision is made to that extent on each side. The posterior lip falls back; the anterior lip is drawn forward with the hook.

A small needle threaded with strong catgut is passed through the left side of the anterior lip close to the upper angle of the incision, and then across and through the corresponding point on the right side. A similar stitch is inserted about midway between the former and the tip of the cervix. The anterior lip is sponged clean of blood, and first the upper and then the lower stitch is tied. This results in the edges of the anterior lip being folded together, the raw surface being closed completely, whilst the posterior lip is left flat and open. Two or three wool plugs are applied tightly against the cervix to check hemorrhage. The plugs are removed in about sixteen hours, when it is found that the posterior lip is glazed over with lymph and quite dry. In about a week it is covered with mucous membrane extending up to the angle of the wound. Meanwhile the catgut in the anterior portion of the lip is softening, and as a general rule the wound gapes open, while at the same time it is becoming covered with mucous membrane. At the end of ten days the catgut stitches are removed and the anterior lip is allowed to flatten out, there not being any danger of the cervical lips reuniting. On passing the finger, the cervix is found widely patent, and as a rule there is no discharge. At the end of a fortnight the patient is able to resume her home life.

The author has performed this operation on eighty-seven patients. In every case the first period after the operation was practically free from pain, and in twenty-eight cases the relief has been permanent for at least two years. In thirty-three cases an average of eleven months has elapsed since operation, and there has been no recurrence of symptoms. In ten of the cases the records extend over a period of three or four months, but in these the relief so far has been permanent. In eight cases varying from four months to two years some amount of menstrual pain had returned, but in each case was much less severe. In the remaining eight cases the result after the first month is unknown.

Of the eighty-seven cases, forty-one were sterile, having been married for periods varying from two to eleven years. In twenty-four of these cases, in which the records are complete, eighteen became pregnant.

CHRONIC SPHENOIDAL SINUSITIS.

RODGERS (*Boston Medical and Surgical Journal*, December, 1903) found on examining 600 patients that twenty-nine were cases of accessory sinus disease, being nearly five per cent of all who came to the throat department for treatment. Chiari and Lichtewitz reported an average of only two per cent.

Of these twenty-nine cases the antrum of Highmore was affected four times; the frontal once; a mixed frontal and ethmoidal twice; the anterior ethmoidal three times; the posterior ethmoidal two times; the sphenoidal sixteen times; and a mixed posterior ethmoidal and sphenoidal once. This places empyema of the sphenoid at the head of the list, which does not agree with the majority of clinical observations in placing the maxillary sinus as the place most commonly diseased. In most cases it is impossible to see the opening into the cavity, owing to the obstruction of the vision by the middle turbinate.

In making a diagnosis of sphenoidal disease the author relies mainly on the probe. The probe must be passed in the

direct continuation of the line from the anterior nasal spine to the middle part of the middle turbinate. It must not go anterior to this line. The distance from the anterior nasal spine to the anterior sphenoidal wall is 7½ centimeters and never more. If the probe goes a greater distance, it is in either the sphenoidal sinus, brain cavity, or nasal pharynx; if it goes over the turbinate into the middle part in the direct line mentioned, it is certainly in the sphenoidal cavity. The probe must be bent with a slight horizontal concavity in order to pass around the convexity of the middle turbinate; the tip should be bent very slightly downward, as it is easier to enter the cavity and there is less danger of injuring the posterior walls. Having entered the cavity and feeling roughened bone, or spongy granulation tissue, one is warranted in making a diagnosis of sphenoidal disease, and justified in opening the cavity for the relief of many obscure symptoms, such as somnolence, numbness of the lower lip, nervousness, cough, deafness, chills, vertigo, diffuse pain in the head, pain in the back of the head, deep-seated pain back of the eyes, or another symptom not so obscure, namely postnasal discharge, which is too often treated as an ordinary catarrh by postnasal applications.

The sphenoidal cavity is opened, after thoroughly cocainizing the nose, by removing a piece of the middle turbinate anteriorly to the wall with a Knight cutting forceps. With the same forceps the tip of the turbinate is grasped and bent toward the outer wall, then by a quick twist in the opposite direction it is fractured along its attachment, the forceps still grasping the bone as it is removed, and usually the whole turbinate comes away, leaving a free and easy approach to the sphenoidal opening. Hemorrhage is usually brisk at this time, but it is not of long duration, and further bleeding is exceptional. The patient is instructed to use a spray of 1:1000 solution of adrenalin twice a day for ten days, after which the sinus is opened. This is done under cocaine with forceps constructed on the principle of Grünewald's cutting forceps. After the forceps has entered the nose its jaws are slightly opened, and while paying attention to the upper jaw only the instrument is passed into the sphenoidal opening in the same manner as the probe. The jaws are then brought together with firm pressure, biting out the anterior wall to establish free drainage. Usually this is all that is necessary to obtain complete relief. In two cases only has the author found it necessary to curette and syringe out the cavity.

This method has given complete relief in the eleven cases reported by the author, and the more extensive operation, by way of the antrum of Highmore, as recommended first by Jansen and later by Luc and Furet, has not been necessary in a single case.

TREATMENT OF ANGIOMATA.

FRATTINI (quoted in the *New York Medical Journal and Philadelphia Medical Journal,* Nov. 21, 1903) has employed the bloodless method of Monteggia in the treatment of thirty cases of angioma. This consists of the application of a paint containing 4 grammes of corrosive sublimate to 30 grammes of collodion. Several layers of the collodion are painted on the angioma, one over the other, and the whole is covered with an antiseptic dressing. The painting is repeated every three days. On separation of the eschar there is sometimes a slight erosion. The method is not applicable to the angiomata of mucous membranes, as the caustic may produce an ulcer.

Regions covered with hair must be shaved before making the application. The results have been most satisfactory in all the cases in which the author employed this treatment.

CARCINOMA OF THE STOMACH—SURGICAL TREATMENT.

MURPHY (*Annals of Surgery,* December, 1903) states that exploratory gastrotomy combined with direct inspection of the gastric mucosa is the ideal procedure for the early diagnosis of suspected gastric carcinoma. By this procedure many lives will be saved, much suffering avoided, and the radical operation for gastric carcinoma will give entirely different results in the immediate mortality and the permanency of the cure. Fortunately for the surgeon, the area

most frequently attacked by carcinoma is the one most easily exposed for ocular examination in exploratory gastrotomy.

In papillary cancer with a large base the prognosis is relatively good, as it is least malignant. Since the radical operation takes some time Schleich's anesthesia is recommended, which even debilitated patients can stand. Mikulicz's method of reuniting the stomach and intestine by closing the duodenum with a purse-string suture and establishing anastomosis between the inferior angle of the gastric wound and the jejunum simplifies the operation, takes less time, and is more rational, since it changes the position of the stomach the least.

A great improvement on the permanent results can be obtained by recognizing and taking advantage of the "area of immunity from cancer" demonstrated by Mayo. With the exception of 17.4 per cent of the cases (viz., those occurring in the cardia, 8 per cent; in the posterior wall, 4.7 per cent; involving the whole stomach, 4.7 per cent), cancer involves the pyloric area. This "immune area" can be preserved in gastrectomy, and furthermore all but that portion can be removed safely, permitting the surgeon to go wide of the primary focus, thus diminishing the liability of recurrence *in loco* or in the adjacent glands.

The surgeon has a still greater field which up to the present time has been grossly neglected in the prophylactic treatment of carcinoma of the stomach. Mikulicz estimated that on an average 4 to 5 per cent of the race suffer from gastric ulcer. Friedler found in 2200 postmortems that in 20 per cent of the women and 1.5 per cent of the men fresh or cicatrized gastric ulcer was present. These ulcers and scars were frequently the seat of carcinomatous degeneration; their proper treatment is therefore an important factor in prophylaxis of carcinoma.

Carcinoma is induced or invoked by mild and repeated irritations of normal or cicatricial epithelial surfaces and by those conditions which prevent the normal emptying of the stomach, such as pyloric obstruction. The prophylactic treatment of carcinoma therefore involves the early relief and removal of all the conditions which tend to retention and its sequential gastric irritation. The radical removal of the pylorus, even for non-malignant disease, cannot be considered except for complete occlusions, as it involves a mortality not to be overlooked. The relief of the obstructive conditions can be secured however by the safe and very satisfactory operation of gastro-enterostomy.

ADRENALIN IN THE TREATMENT OF INTERNAL HEMORRHAGE.

SIMONOVITCH (quoted in the *Journal of the American Medical Association,* Jan. 23, 1904) found that dogs and rabbits tolerated large doses of adrenalin by mouth without general effects. Human subjects also took five times the usual accepted largest therapeutic dose without showing any general effects, not even a single subjective symptom. No general effects were observed in the animals, even after the intestine had been injured intentionally. Absorption of adrenalin into the blood through the mucous membrane of the alimentary canal, therefore, must be a very slow process. It can be ingested with impunity, and hence will be found very valuable in cases of internal hemorrhage. Its value as an internal hemostatic will be enhanced by giving it in small repeated doses rather than in a single large dose.

DYSTOCIA CAUSED BY CONGENITAL CYSTIC KIDNEYS IN THE NEW-BORN.

Congenital cystic degeneration of the kidney is especially rare as a cause of dystocia. In a few of the cases on record the enormous distention of the kidneys necessitated puncture of the abdominal wall and practical evisceration before delivery could be effected.

FUSSELL speaks of eleven cases in which the kidney obstruction was so great as to render mutilation imperative. In one case the abdomen measured 18 inches at the umbilicus; both kidneys were enormously enlarged, the left 6 x 5 inches, the right 5 x 4 inches; both in original form, nodulated, and the seat of cystic degeneration; the mass composed of a multitude of small cysts, varying in size from a pea to a pin-point. Frequently associated with congenital cystic kidney are

defects of development, hydrocephalus, cleft-palate, harelip, spina bifida, and defects of the genito-urinary organs.

MORSE (*Journal of the American Medical Association,* Dec. 19, 1903) thinks the diagnosis of congenital cystic kidney cannot be made early enough to be of any practical value to the obstetrician. Its occasional occurrence, however, should not be overlooked in those cases in which there is prolonged and unnatural resistance to the birth of the body. Careful examination demonstrating the distended condition, and all other efforts failing to effect delivery, the physician is justified in puncturing the abdominal wall, passing his fingers through the opening, and by a removal of the enlarged kidneys reducing the size of the child sufficiently to permit of its passage through the birth canal.

It not infrequently happens that cases of cystic kidney fail to go to term. Should such a pregnancy extend to the full period of gestation, the child is still-born or expires a few minutes after birth. The causes of death are numerous; but asphyxia, from compression of the lungs and diaphragm, is the direct cause in a great majority of cases.

VITILIGO TREATED WITH FINSEN LIGHT.

MONTGOMERY (*Journal of Cutaneous Diseases,* January, 1904) reports a case of vitiligo in a full-blooded Mexican nineteen years of age. The affection began at five or six years of age and steadily increased until patches were distributed over the entire cutaneous surface. Local applications and internal medications were employed for three months without benefit.

Only those spots that were exposed to view on the face and hands were treated by means of the Finsen light. There were nine sittings in all, and about five applications of the light for ten minutes to each spot treated. The instrument used was the London Hospital lamp. The skin was well reddened as in a sunburn. Some of the more recent spots about the mouth showed immediate improvement on the subsidence of the inflammation. Some of the older spots were much slower, both in reaction and in improvement. Treatment was interrupted long before the restitution of pigment in most of the spots. Four months later there was not a sign of a patch on the face, and those on the hands had nearly disappeared.

THE TREATMENT OF ECLAMPSIA.

SMITH (*Annals of Gynecology and Pediatry,* January, 1904) believes that eclampsia is due to an anemia of the corpora striata or such other parts of the brain centers as control muscular movements. This anemia is brought about by spasm of the arterioles which carry the blood to the part, but the spasm is not limited to these arterioles alone.

Treatment should be directed to relaxing the vasomotor spasm, thereby permitting the blood to rush into the brain and kidneys, which in turn is followed by a return of consciousness, and by free elimination of the toxin which produces spasm. The treatment should consist of a hypodermic of ½ to ¾ grain of morphine, followed in five minutes by a hypodermic of tincture of veratum viride, repeated every ten minutes until the convulsions stop, or the pulse goes down to 40. This should be followed by an enema of a quart of salt solution, which will be absorbed quickly by the rectum, and within half an hour, as the spasm in the arterioles of the kidneys relaxes, there will be a copious secretion of poison-laden urine. Chloroform, chloral, and *accouchement forcé* will not be needed.

Within a half-hour the woman falls into a deep slumber. Normal labor, with the expulsion, probably, of a dead fetus, will occur within one to seven days.

The author has employed this treatment in three cases, and one of his pupils, de Cotret, in forty cases, without a death.

CARCINOMA OF THE RECTUM.

In carcinoma of the rectum TUTTLE (*New York State Journal of Medicine,* January, 1904) states that the seriousness of the disease cannot be overestimated. Some few cases survive, with or without colostomy, for twelve or eighteen months, but nine months after the disease has become well established is a long average of life for these unfortunate patients. Without extirpation of the can-

cer all die within one or two years, and during the last six months their misery is so great that death is usually anticipated with relief.

In the prolongation of life all reliable statistics show that the average is from six months to three years greater after extirpation than after colostomy. In the relief of pain extirpation is perfect, whereas all other methods are only partial. In restoration to strength and usefulness it excels all other methods because it removes the source of autointoxication, the cause of the diarrhea, and the reflex disturbances of the digestion.

In its immediate mortality alone does extirpation compare unfavorably with other methods. The author has operated on 43 cases with an immediate mortality within two months in 7 cases, death within one year in 3 cases, death within two years in 2 cases, and in 1 case, in which the operation was incomplete, owing to collapse, the patient is still living, but had a recurrence within four months. Of the 29 cases remaining, 22 are known to be alive, and 16 of these have survived the operation for periods varying in length from two to eleven years.

Among the chief causes of death is late or improper diagnosis. Four of the fatal results occurred in cases in which the disease had been recognized too late for any hopeful interference. Every case of progressive constipation, and every case of diarrhea lasting over two weeks, or recurring from time to time, ought to have a careful rectal or sigmoidal examination. Next to late diagnoses, infection is the chief cause of death.

HYOSCINE HYDROBROMATE AS A PRELIMINARY TO ETHER ANESTHESIA.

ROBERTSON (quoted in the *Journal of the American Medical Association,* Jan. 23, 1904) has employed hyoscine hydrobromate in connection with ether anesthesia in fifty-seven cases of abdominal and other operations in adult women with excellent results. He usually gives .01 of hyoscine hydrobromate hypodermically, half an hour before the beginning of ether inhalation, causing dryness of the mouth, thirst, and dilatation of the pupils, at which time ether is administered. The administration causes but little secretion of mucus. The patients are less anxious, there is a tendency to sleep after the anesthesia, which as a rule is more rapid than when the ether alone is given, and in no case was there severe or prolonged after-vomiting. In fifty-five cases the patients were absolutely quiet during administration. In none of the cases were there any respiratory disturbances following ether.

The hyoscine hydrobromate acts by counteracting the overstimulating effects of ether, decreasing the amount of mucus. If it proves to be free from danger, it will be a valuable aid in the administration of ether.

THE INTESTINAL PERFORATION IN TYPHOID FEVER.

HARTE and ASHHURST (*Annals of Surgery,* January, 1904) have examined the records of 362 patients who, during the course of typhoid, submitted to laparotomy for intestinal perforation, or for peritonitis without actual perforation.

In a total of 8881 cases of typhoid fever collected from various sources, perforation occurred in 225, giving a percentage of 2.54. The white race is more disposed to perforation than is the negro race; the male sex is more liable to suffer perforation than the female, in the ratio of about four to one. Of 279 cases in which the age is known, over 12 per cent occurred in patients under fifteen years of age; over 54 per cent between fifteen and thirty years; and only 33.6 per cent in those over 30 years of age. Intestinal parasites may be a predisposing cause, or even in rare instances an exciting cause. Out of 932 cases of typhoid perforation reported by Armstrong, two had intestinal worms.

Of 286 cases is known the stage at which the perforation occurred; only six, or about 2 per cent, occurred in the first week; the second or third week witnessed 102 perforations, or 56.6 per cent of the whole number; while after the end of the third week only 41.2 per cent occurred. Contrary to the teaching of many writers, the authors believe that perforation in the majority of instances is a lesion of the severer forms of the disease. Thrombosis beneath the serous

coat of the bowels and tympanites act as predisposing causes of perforation.

The exciting causes are chiefly those which act mechanically. Among these, indiscretions of diet probably hold first place; then purges, injudiciously administered, large or too forcible enemata, a sudden motion in the bed, straining on the bedpan, and the almost unavoidable contraction of the abdominal muscles produced by the physical shock of the cold bath, have been held responsible for the immediate onset of the symptoms of perforation.

As to the form of the perforations, the larger circular lesions generally are due to sloughing, the smaller cribriform to ulceration, and the oblong, slit-like perforations have been thought to be due to traumatism.

The perforation usually is situated on the part of the bowel diametrically opposite to the mesenteric attachment; occasionally, however, an ulcer perforates between the layers of the mesentery, and a retroperitoneal abscess is formed.

In 271 cases in which the number of perforations is mentioned, a single perforation occurred in 236, while in the remaining 35 it was multiple. In 72 cases the perforation was less than one-eighth of an inch in diameter (practically pin-headed in size), in 73 cases it was under one-half inch, and in only 23 cases was it over a half-inch in diameter, while in the remaining cases the size of the perforation was not mentioned.

The site of the perforation is given in 190 cases; in 140, or over 73 per cent. the lesion was found within 12 inches of the cæcum; and in only 4 cases, or 2.1 per cent, it was over three feet distant from the ileocæcal valve. In 7 cases only was the colon perforated, in 5 the descending colon, in one each the sigmoid and the transverse colon. Meckel's diverticulum was perforated three times, and the appendix eight times. There were 12 patients in whom a subsequent perforation occurred; these all died. In 3 cases, while one or more perforations were found at operation, others in the same patient were not detected, and all 3 cases proved fatal.

In the cases in which the typhoid bacillus alone is the infecting cause the usual lesions are a low grade peritonitis, lemon-colored exudation, few adhesions, and not much lymph. Where the streptococci or the staphylococci abound the lymph is more abundant, and adhesions are the rule if the peritonitis has lasted more than a few days. The prognosis is much more grave in the streptococcic infection than in typhoid.

In a typical case the symptoms are well marked and easily distinguished, but unfortunately such a case is the exception; moreover, a person may present all the clinical evidences of a perforation, and yet no evidence of perforation will be found at operation; and on the other hand, the patient may die without abdominal symptoms of importance, and at autopsy a perforation may be found.

Pain alone is by no means pathognomonic, but it is the most valuable subjective symptom. The pain experienced usually is a stabbing sensation, mostly in the right lower quadrant of the abdomen, though for it to be felt in the epigastric or umbilical regions is not infrequent, or it may be located in the bladder or at the end of the penis. There may be a let-up of the pain or it may continue.

The patients at times will scream out and roll around the bed in agony, doubling themselves up with abdominal pain, which may persist for two or three hours with undiminished intensity. A very apathetic patient may not complain of pain, or there may be only a gradual increase of discomfort in the abdomen, with no sudden onset of pain. This is more usual where the abdomen is already tympanitic and where peristalsis has been very slight for some time.

Vomiting alone cannot be considered at all indicative of perforation, but where it occurs the first time, and especially where it either precedes or follows pain, it should not be passed by lightly; if it is at all violent it very likely will cause perforation, and in many instances follow it.

At the same time as the pain, or soon after, sweating may occur, or it may even precede the pain. With the sweating, or when sweating is absent, occurs a fall in temperature; a drop of 4° to 6° is not infrequent. A secondary rise may occur with the onset of peritonitis.

Frequently a change in the solubility of the bowels follows perforation; were they loose before they become confined,

or were they costive previously they become loose. Delirium may have preceded or may develop only with the peritonitis.

In making a diagnosis of perforation more reliance can be placed upon the physical signs than upon the subjective symptoms, and of the former the most valuable is rigidity of the abdominal walls. Muscular rigidity is most frequently observed in the right rectus muscle, less frequently in the right oblique muscles, sometimes in the left rectus, and occasionally spreading with the inflammation all over the abdomen.

In most cases of typhoid fever the pulse is low in relation to the height of the fever, rarely averaging more than 100 beats per minute; but after perforation the rate rises to 120 or 140 in a very short time, often within fifteen or twenty minutes, and the respirations may be accelerated as well. The facial expression is important. Almost from the very moment of perforation there is a distinct change of expression difficult to describe, which consists chiefly in a general weakening of the expression.

Tenderness, while often present throughout the disease, is without exception increased by perforation. When present it is usually found in the right lower quadrant near the site of the lesion. Dulness on percussion is a very uncertain sign, but if well marked movable dulness in the flanks develops within the course of an hour, it presents very excellent evidence of a solution of continuity in the intestinal walls.

The absence of free peritoneal fluid on no account should be taken as proof that perforation or peritonitis does not exist. Edema of the abdominal walls is occasionally observed, but has no specific significance.

The condition of the blood is one of the most vexed questions that arise in connection with perforation. The whole question is undecided; the accurate observations being still too few to draw any definite conclusions.

The differential diagnosis has to be made most often from hemorrhage. While the collapse may be the same in either case, the hemorrhage as a rule is unattended by pain, and there is no rigidity present. In hemorrhage the blood is generally passed by the bowel in the course of an hour or so at the outside; and in most cases where confusion is liable to arise the occurrence of previous hemorrhages in the same patient would incline one to pause before undertaking an exploratory laparotomy. Hemorrhage may occur in conjunction with perforation, and in any cases where reaction from collapse due to obscure abdominal lesions does not occur promptly, the authors are in favor of operative treatment, since in one of their cases the bleeding point was found by laparotomy and ligated. The diagnosis from appendicitis or from peritonitis without perforation is not essential, as operation is indicated in any event. Affections of the gall-bladder occurring during typhoid fever are not uncommon. They present pain in the right hypochondriac region; vomiting is persistent; no fall of temperature occurs; there is little shock, and the physical signs of tenderness, rigidity, dulness, palpable mass, aid in localizing the disease. Perforation of gastric ulcers during typhoid fever is recognized chiefly by localizing signs. Suppurating mesenteric glands or splenic infarcts may give rise to peritonitis in this disease, but here the symptoms are those of peritonitis pure and simple.

Of those patients who died after the operation, in very few indeed did the operation hasten death. Only five of the patients operated upon are known to have died before the conclusion of the operation. Of those who died, 21 lived two days, 23 lived three days, 21 five days, 7 nearly a week, while 11 lived over a week, 3 over two weeks, and 4 over a month. Of the whole number 26 per cent finally left the surgeons' care well.

The most favorable cases have been those in girls from ten to fifteen years of age; the perforation occurring in the first week of the disease when the constitution is still strong, or in convalescence; the operation having been performed the third hour after perforation; the single perforation being pin-head in size; within a few inches of the cæcum, or in the appendix; or where no fæcal extravasations had occurred, nor adhesions were present. Such would be the ideal case, and the mortality should be less than 50 per cent.

The treatment of all patients suffering from intestinal perforation in typhoid

fever should be by laparotomy, and suturing of the perforation. To trust to medical treatment alone is nothing short of folly. The average time consumed in operation by skilful operators is about fifteen to twenty minutes. General anesthesia with ether is preferable to any form of local anesthesia. The cleansing of the abdomen, while thorough, should not be vigorous, for fear of diffusing any extravasated fecal matter and of producing further perforations. Speed in operation is imperative. The best incision is that made through the outer half of the right rectus muscle. It is straight, small, direct, and economical of time, and is a route that gives direct access to the landmark of the cæcum and to that part of the small gut most often affected, and affords sufficient room for exploring nearly the whole abdomen. At the same time it can be extended in either direction at need, and offers excellent drainage facilities.

When the perineal cavity is opened the cæcum should be located, and the vermiform appendage should be inspected and removed if necessary. The infected area should be walled off with large gauze pads. The ileum is next drawn into the wound and carefully examined. It is a great advantage to have two pairs of eyes examining it at the same time as it passes through the surgeon's hands, one watching the upper and one the lower surface. Chilling of the eventrated bowels should be prevented by covering them with hot towels, and douching them with hot saline solution. When the perforations are found, all other coils of intestine should be replaced. If the bowel is much distended with gas or fecal matter it should be allowed to discharge through the perforation, after which the perforation should be sutured. Excision of the ulcer is not only perfectly useless, but harmful as well, since it consumes time and may open a blood-vessel. Black silk is the best suture material, using it threaded on a small, round, straight needle. The perforation should be closed by superimposed rows of mattress sutures, parallel to the long axis of the gut. At times it may be more expedient to use a purse-string suture, the application of which takes less time. It is round and small and holds well if the surrounding bowel is in fairly good condition. In those cases in which the diseased area extends so far transversely that suture is impossible, the grafting of a piece of omentum over the defect, enterectomy with end-to-end anastomosis, and the making of a false anus must be considered. The making of a false anus consumes less time and is easier of accomplishment to one unaccustomed to abdominal surgery. A fecal fistula, however, is sure to prolong the healing of the wound, and in a fair proportion of cases will require a subsequent operation for its closure. Moreover, it is difficult to drain the peritoneal cavity effectually through the same wound at which the bowels are emptying themselves, and there is constant danger of infecting the peritoneum by the backward leakage, so that on the whole, where closure of the perforation by suture or omental grafting is impossible, excision of the diseased portion of the gut with circular enterorrhaphy is to be preferred. Omental grafting is applicable to threatening perforation as well as to actual perforation.

Every perforation having been found and treated as seems indicated, the sutured gut should be fixed beneath the parietal wound, and if there has been fecal extravasation, or if there has been general peritonitis, the abdominal cavity should be thoroughly irrigated with several gallons of hot salt solution. Drainage is necessary in nearly every case. In the simplest cases a wick of gauze may be introduced and the abdominal wound closed through nearly its entire length. If, however, there be any suspicion of pelvic inflammation, a good-sized piece of gauze should be carried down to the pelvic floor. The dressing should be copious. The patient is to be returned speedily to a well warmed bed, the foot of which may be raised 12 or 14 inches to facilitate the drainage of fluid from the pelvis. Hypodermoclysis or intravenous injection of normal salt solution may be begun now, or may be continued if not completed as soon as the operation. When the patient comes out of ether, a high enema of a pint of hot normal salt solution should be given every two or three hours. Food by mouth should be avoided as long as possible; peptonized milk or beef juice can be added to the saline enemata. Hypo-

dermoclysis and enemata of normal salt solution are likewise valuable adjuvants in combating the typhoid toxemia. After twenty-four hours a teaspoonful of hot water may be given by the mouth every ten or fifteen minutes. In feeding by the mouth it must be remembered that the patient has both typhoid fever and a sutured area in his intestine, and he should be fed accordingly.

The gauze drains can be removed between the fourth and seventh day, to be replaced by fresh wicks. Fecal fistula may be regarded as of good prognostic import as far as life is concerned; however, it delays ultimate recovery. If a second perforation occur, or if intestinal obstruction from bands of adhesions develops, a second laparotomy must be performed. Of eight cases where more than one operation was performed, three recovered.

Exploratory laparotomy in cases where the diagnosis is uncertain is practically never the cause of death, and is recommended in all doubtful cases especially, as in some instances the irrigation of the peritoneal cavity has actually seemed to exert a beneficial influence on the course of the disease.

A SIMPLE METHOD OF EXAMINING THE STOOLS FOR GALL-STONES OR OTHER SOLID BODIES.

LILIENTHAL (*New York Medical Record,* Jan. 9, 1904) thus describes a simple method which takes away many of the disagreeable features of examining the stools for solid bodies. Take a loop of telegraph wire, a few inches greater in diameter than the entire top of the closet seat, and fasten to this a bag of at least two thicknesses of dressing gauze or mosquito netting. The bag may be sewn to the wire or simply held by safety-pins, but it should be made very full, so that when the loop is placed the wire shall be well below the level of the seat and the bag shall hang down well into the water at the bottom of the bowl.

If the patient is not confined to bed he defecates into the closet, and then simply opens the water valve long enough to wash away all but solid bodies. If the patient is confined to bed the stool can be carried to the closet. In rural districts the same procedure may be followed, except that the water must be carried to the privy and poured through by hand.

The principal advantage of this method, especially in city practice, is that the patient himself may be trusted to make an absolutely accurate examination. The author has been able to confirm a diagnosis of cholelithiasis from tiny faceted stones considerably smaller than a mustard seed, which had been discovered in the stools by the patient.

AMPUTATION OF THE HIP-JOINT FOR SARCOMA.

During the past fourteen years COLEY (*American Medicine,* Jan. 9, 1904) has observed seventeen cases of sarcoma of the femur and twenty-two cases of sarcoma of the thigh. The majority of these cases were hopelessly inoperable when they came under observation, but in eleven cases high amputation was performed.

In seven instances the amputation was made through the hip-joint, and in four cases below the trochanter. Of the seven cases of hip-joint amputation the sarcoma originated in the bone or periosteum in five cases, and in the muscles or fascia in two cases. The ages of the patients ranged from six to sixty years. The question of curability of sarcoma of the femur by operation is one that is still unsettled. Bullin states that of sixty-eight cases in which treatment consisted of hip-joint amputation, or high amputation, only one patient was known to live more than three years.

The author believes that sarcoma in this locality presents one of the most malignant forms of tumor with which the surgeon has to deal. Of his seven patients with sarcoma of the femur treated by amputation, two died within a year, two within two years, one was not traced, and the last, a recent case, is the only one in which the patient is known to be alive. Of the four patients with sarcoma treated by amputation just above the trochanter, one with sarcoma of the femur died four months later with pulmonary metastasis; the second, with sarcoma of the femur, had a local recurrence at the end of fifteen months, then disarticulation was performed, and the

patient lived two months longer, when he died of generalization of the disease. The third case was a multiple melanotic sarcoma of the skin of the thigh, and the patient died four months later of generalization and internal metastasis. The fourth case was a recurrent sarcoma of the thigh, primary in the tarsus, and there was a local return in the gluteal region, which disappeared under the use of mixed toxins. The patient is living and well at present, six years after amputation.

The author has been able to collect only six cases of sarcoma of the femur which have been cured by high amputation, and after discussing various methods of treatment he presents the following conclusions: (1) Sarcoma of the femur is a malady so dangerous to life, and so prone to early metastasis, that only the most radical operation should be performed, and that at the earliest possible moment. (2) Hip-joint amputation is to be preferred to resection or to amputation through the shaft. (3) Recurrence being the almost invariable rule, after all methods of operation a thorough course of mixed toxin treatment after operation as a prophylactic offers the best hope of permanent cure.

PROLAPSE OF THE LACRIMAL GLAND.

Roy (*American Journal of the Medical Sciences,* January, 1904) reports a case of spontaneous prolapse of both lacrimal glands in a colored woman aged twenty-seven years. Several cases of traumatic prolapse have been reported, as also one or two cases of spontaneous prolapse of one lacrimal gland, but nowhere could the author find records of a case where both lacrimal glands became spontaneously detached. The diagnosis of dislocated lacrimal glands is easy, especially so when there is an incised wound permitting easy inspection in addition to palpation. In all of the cases reported, except one, the deformity was noted externally rather than internally beneath the upper lid; with the exception of deformity due to swelling and the possible limitation of the raising of the lid, spontaneous cases usually cause no inconvenience to the patient. In none of the cases recorded has the lacrimal function of the gland been impaired. In one case, in which the greater portion of the gland was removed, there was no difference in the moisture of the two eyes. In those cases in which a contused or incised wound complicates the condition, operative interference must always be considered. In those cases in which there is no wound, or in the so-called spontaneous dislocations, the question of operation must be decided by the character of the individual case. Mechanical contraction is difficult of application.

If the deformity is not marked, and there are no uncomfortable symptoms, no treatment whatever is necessary. If there is ptosis from the presence of the gland, or if the latter should be painful and of great discomfort to the patient, fixation is to be attempted, and if that fails there is no reason why the gland should not be removed.

URETHROTOMY BY THE COMBINED USE OF AN ANTERIOR AND POSTERIOR SOUND.

In addition to the guide commonly passed down to the anterior face of an impermeable stricture, in performing external perineal urethrotomy, Penn (*Journal of the American Medical Association,* Jan. 9, 1904) recommends the use of a sound passed through the bladder down to the posterior surface of the stricture. A curved trocar and cannula is thrust into the distended bladder just above the pubes. The trocar is withdrawn and the urine allowed to escape. The bladder is then refilled with salt solution, and a long silver sound, curved to fit the cannula, is introduced into the bladder. Traction is made on the penis to obliterate the obstructing folds of the urethra, when the sound can be dropped readily into the dilated proximal urethra. The usual dilatation of the urethra posterior to the stricture in these cases greatly augments the ease of the procedure.

In the two cases in which the author employed this method the ends of the two sounds could be felt distinctly in the perineum, separated from each other about an inch and a quarter.

Incision is then made between the two sounds and the continuity of the urethra

can be reëstablished readily. The danger of urinary infiltration or sepsis following intravesical puncture is reduced to a minimum. The opening in the bladder made by the trocar is smaller, even, than the instrument itself, since fewer fibers of the bladder wall are cut when that viscus is distended than would be the case were it empty, hence there is no leakage. The simplicity of this operation makes it preferable to the more complicated suprapubic section.

SENILE HYPERTROPHY OF THE PROSTATIC GLAND—RADICAL CURE.

HORWITZ (*Medical News,* Jan. 23, 1904) believes the following deductions are justifiable after a review of the results of 141 radical operations for senile hypertrophy of the prostate:

1. A routine method is not applicable to the treatment of senile hypertrophy of the prostate, for every case is a law unto itself, and the treatment will depend on the problems presented by each individual case.

2. The dangers attendant on the daily catheterism are greater than those of a radical operation performed at the onset of the symptoms caused by the obstruction.

3. The proper time to perform a radical operation is reached as soon as it becomes necessary for the patient to resort to a daily catheterization.

4. The gratifying results in many cases demonstrated that the Bottini operation is one of great value. It is applicable to a large percentage of cases, which, if properly selected, will prove to be the safest and best method of relieving the obstruction caused by prostatic hypertrophy. In those cases in which stone in the bladder is associated with prostatic enlargement, litholapaxy may be performed in conjunction with a galvanocautery prostatectomy.

5. A complete prostatectomy is justifiable if performed before the individual has broken down in health and secondary complications have supervened. In early operation the results are most satisfactory, recovery rapid, the mortality falling between five and seven per cent.

6. A complete prostatectomy in feeble, elderly patients with long-standing obstruction and secondary complications gives a grave prognosis, and the mortality ranges between fifteen and twenty per cent. If the bladder in these cases happens to be hopelessly disabled, the results obtained by the operation are negative, as they are suitable only for suprapubic drainage.

7. In ninety per cent of all cases the gland can be removed readily by means of the median perineal incision recommended by Byron, and it should be considered the operation of choice.

8. Complete suprapubic prostatectomy is shown to be more dangerous than perineal operation for obvious reasons. Suprapubic operation is safer if combined with perineal drainage.

9. Partial suprapubic prostatectomy is indicated in those cases in which a valve-like lobe exists which interferes with urination, or in which there is hypertrophy of only one of the lobes.

10. A perineal prostatectomy is considered best for those cases in which the enlargement of the lateral lobe has a tendency to progress toward the rectum, to obstruct the urethra, or to project backward into the bladder.

11. Prostatectomy is always attended with more danger than a Bottini operation and the convalescence is more prolonged; in suitable cases therefore the latter operation is the one of choice.

GALL-STONES—SURGICAL TREATMENT.

CURTIS (quoted in *American Medicine,* Jan. 16, 1904) urges operation while the stone still remains in the gall-bladder or cystic duct, and before grave infection has developed. The serious accidents of infection are thus avoided, and any inflammatory condition which may exist can be improved or cured, in the same way that drainage cures urinary cystitis. The stone is removable before it enters the common duct, thereby preventing all dangerous consequences likely to follow the presence of a stone in that passage, and further attacks of cystitis or colic are prevented. Further calculous formation is prevented or impeded, for the infected gall-bladder may be excised or rendered so healthy by drainage that no more calculi will form. Latent cases are by no means free from danger. The possibility

of secondary pancreatitis must be kept in mind, also that of carcinoma of the gall-bladder, which is more common than has been supposed.

Without reference to more important results it is the general feeling of those experienced in surgery or cholelithiasis that in the latent cases, while the patients do not present symptoms pointing directly to the biliary system, they are affected with various dyspeptic complaints, and the latter can be permanently relieved or cured by operation.

Correspondence.

LONDON LETTER.

By George F. Still, M.A., M.D., F.R.C.P.

An extremely interesting discussion took place this month at the Chelsea Clinical Society, one of the most vigorous of our suburban medical societies, on "internal secretion" in disease and in treatment. Sir Lauder Brunton opened the discussion with some general remarks on the subject, pointing out that several glands have an internal as well as an external secretion, and that on the one hand deficiency of the internal secretion might cause disease—as happens in some cases of diabetes which appear to be due to a deficient production of the sugar-destroying internal secretion of the pancreas—while on the other hand excess of the internal secretion might be almost as harmful, a fact proved by the occurrence of all the symptoms of exophthalmic goitre, except the exophthalmos and the goitre, when thyroid was used in too large quantity for myxedema. Even the kidney probably has an internal secretion, although at present but little is known of its character. Sir Victor Horsley said that not only might internal secretion be entirely lacking (as in cases of cretinism), but it might also be perverted in character, so that instead of being beneficial it might act as a poison; this is shown to be the case sometimes with simple goitre. In exophthalmic goitre it seems clear that certain nervous symptoms are directly due to the toxic effect of altered thyroid secretion; but it is difficult on this view to explain the beneficial effect of certain methods of treatment. There is no doubt about the curative effect of systematic electrical treatment with the faradic current in many cases of exophthalmic goitre, and it is equally certain that the removal of the isthmus of the thyroid is equally beneficial in some cases; but how are these facts to be explained? It may be that such treatment reduces the hyperemia of the gland on which some alteration of secretions may depend.

Referring to the therapeutic uses of thyroid extract Sir Victor Horsley said that where enlargement of the gland is already associated with symptoms of poisoning by excessive or altered secretion it is not to be expected that the extract will prove of service, but in cases of parenchymatous goitre it is sometimes distinctly beneficial. He mentioned also a curious relation which exists between animal proteid in food and the proper secretion of the thyroid; adenoma of the thyroid and also parenchymatous goitre are often associated with a great dislike for meat food, and if such food is given the patients become much depressed and suffer with headache. Similarly dogs after the thyroid has been removed show symptoms of acute poisoning if fed on meat.

Unfortunately the knowledge that a disease is constantly associated with anatomical lesions of one or other of the glands which have an internal secretion is not always sufficient to tell us the treatment of that disease; it might be expected that acromegaly, in which enlargement of the pituitary body is constantly found, would be amenable to treatment by administration of pituitary body in some form, and that Addison's disease would respond at once to treatment with suprarenal extract; but experience shows that this is not so. Dr. Rolleston, however, considers that suprarenal extract is of some value in Addison's disease, often causing temporary improvement and occasionally producing a change almost amounting to a cure.

Dr. Hale White emphasized the large part played by the pancreas in producing diabetes. A small, atrophied, hard pancreas is specially associated with diabetes: out of nineteen cases in which such a condition was noticed at autopsy, sixteen had been the subjects of diabetes; but undoubtedly there were cases of diabetes in

which no disease of the pancreas could be detected. The relation of Graves's disease, exophthalmic goitre, to some autointoxication by an internal secretion from the thyroid gland seems indisputable; but it is difficult to reconcile this with the fact that this disease shows a special tendency to occur in women who have suffered with rheumatic fever, or to understand why there should be a hereditary liability to this condition, or why it should occur so much more often in women than in men.

At the Epidemiological Society a discussion took place recently on the etiology of scurvy, the basis of the discussion being an outbreak of supposed scurvy in the Transvaal during the Boer war. It was stated that the disease attacked natives almost exclusively, and that its intensity was not related to diet but to sanitary conditions; moreover, that it occurred even when fresh vegetables were freely used. It was suggested therefore that scurvy is a specific infection, and, as in these cases, might be prevented or cured by attention to antiseptics in the mouth.

We have heard so much recently about ptomaine poisoning as a cause of scurvy that we are not surprised to hear it suggested that scurvy is a specific infection. No doubt there will soon be claimants in the bacteriological department; but in the meantime one can only feel sorry that unnecessary confusion should be introduced into a really difficult subject by these ill-considered theories. In this particular discussion it was remarkable that only one speaker hinted at the possibility that the cases mentioned were not scurvy at all. It would be well if the fact that a mere sponginess and swelling of the gums is not sufficient evidence of scurvy were more generally recognized. In the epidemic under consideration there was apparently nothing more than an infective stomatitis, the scorbutic nature of which was not merely unproven, but was extremely improbable, in the absence of the general symptoms, hemorrhagic and otherwise, which characterize scurvy.

The recent Hunterian Lectures by Mr. Mayo Robson were full of interest. The diseases of the pancreas have been so little studied until the last few years that to most practitioners who obtained their qualifications ten or twenty years ago the symptoms of pancreatic disorders are probably almost unknown, and "steatorrhea" and "azotorrhea" convey but little information. As general symptoms of pancreatic disease, the following were mentioned: fatty stools, which are generally pale and greasy-looking; imperfect digestion of albuminous foods, so that muscular fibers of meat can be seen in the stools even with the naked eye; a form of diarrhea, the stools being bulky, soft, and greasy; emaciation; nausea and vomiting; jaundice; fever, in the inflammatory diseases of the pancreas; pain and tenderness in the epigastrium; hemorrhages from mucous surfaces and in the skin; glycosuria. Hemorrhage into the pancreas causes symptoms varying in severity from transient attacks of mild colic in the epigastric region, up to violent pain with collapse and death within a few hours. This condition is difficult of diagnosis at first, but when it has lasted long enough to be followed by acute pancreatitis, it can be diagnosed with some degree of confidence. Acute pancreatitis, with its sudden epigastric pain, vomiting, constipation, and collapse, is very apt to be mistaken for intestinal obstruction, or for perforated gastric ulcer, or even for acute ptomaine poisoning; or the slight jaundice which is often present may lead to suspicions of some cholecystitis. A valuable means of diagnosis is the so-called Sahli reaction: iodoform enclosed in a gelatin capsule hardened by formalin is given by mouth; if iodine fails to appear in the urine within eight hours after the capsule has been swallowed, the pancreatic digestion by which it should have been dissolved is shown to be impaired.

Since I wrote my last letter the King and Queen have honored Cambridge with their presence; and in opening the new laboratories of the university his majesty pleaded for new endowments for that "study and research which are essential to the maintenance and the greatness and the welfare" of his empire.

Within the past week also an event of great interest in the medical world has also taken place—the annual election of the president of the Royal College of Physicians. It is rarely indeed that any president has held office beyond the fifth year, but Sir William Church has just been reëlected to the presidency for his sixth year, a mark of the high esteem in which he is held by the profession in this country.

PARIS LETTER.

By R. H. Turner, M.D. (Paris).

Drs. Marfan and Menard have recently published the statistics of the diphtheria wards of the Enfants Malades hospital from May, 1902, to May, 1903. One thousand one hundred and forty-two children were treated, and the gross mortality was 15.8 per cent. If all deaths taking place in the first twenty-four hours are put aside, the mortality is only 11.1 per cent, and by removing all deaths during the first two days, the mortality is only 9.3 per cent. A large number of prophylactic injections were made: one thousand children, brothers and sisters of the children affected, were injected, the dose being five cubic centimeters. Only two were taken with diphtheria, respectively twenty-four and four days after the inoculation. The cases were light. During this period diphtheria was not so severe, but the cases of croup were more frequent—544 out of 1142 cases of diphtheria. The cases of croup during measles were also intubated, which destroys the classic idea that tracheotomy is necessary in such cases. Local treatment was reduced to its simplest form, and only employed in gangrenous cases.

The suppression of salt in the treatment of hyperchlorhydric dyspepsia has been tried recently by Dr. Vincent, of Paris, and with good results. In one case during a first period the patient was given 12 grammes over and above the usual amount. An analysis of the gastric juice showed there was a notable increase in the amount of chlorides secreted, and this applied especially to hydrochloric acid. The hypochloride regimen was then established to such a degree that the amount of chloride of sodium secreted by the kidneys was only 40 centigrammes. The various morbid symptoms disappeared, and an analysis of the gastric juice showed a remarkable decrease in the amount of chlorides and hydrochloric acid secreted. This would seem to indicate that this regimen is of benefit in certain hyperpeptic forms of dyspepsia.

The sewage of Paris used to be in great part poured into the Seine, which thus remained infected for the rest of its course. This has been changed slowly, more and more of it being spread over the fields or "champs d'épandage" of Gennevilliers, Acheres, and other suburban places. In 1902, 226,000,000 cubic meters were thus disposed of, and only 28,000,000 cubic meters are still carried off by the Seine. It was at first thought that the vegetables grown in such localities might prove to be dangerous to the public health. No indications of this have been seen so far; for instance, in 1902 there were 202 deaths in Gennevilliers out of a population of 10,056, not one being caused by diphtheria, typhus, typhoid fever, or intermittent fever, and out of the 18 deaths due to diarrhea, 15 were caused by infantile diarrhea in children under one year old. Dr. de Lavarenne, who has written an article in the *Presse Médicale* on this subject, concludes that the purifying of sewage by the ground is as perfect as possible.

At a recent meeting of the Academy of Medicine, Professor Lannelongue read a report on an article presented by Dr. Villemin, in which the author describes the results obtained by interstitial injection in the treatment of tuberculous osteoarthritis. An iodoform solution is first injected into the articulation, and three to four days later a one-in-ten solution of chloride of zinc is injected into the fungosities. The tissues are transformed very rapidly. In three or four months the tuberculous tissue has become normal, and after five months movements of the articulation can be carried out. The extent of the movements is not modified by the treatment; they are if anything increased. No efforts should be made to increase them, however, as this might lead to a revival of the infection. This treatment was tried in nine cases and was uniformly successful.

Dr. Gilbert, professor of therapeutics at the Faculty of Medicine, recommends in his lectures the following preparations of creosote, which are administered by the the mouth:

> Creosote,
> Iodoform, āā 5 grammes;
> Powder of licorice, q. s. ad lxxx pills.
>
> Eight pills a day: Two in the morning, three at the midday meal, and three in the evening.

All preparations of creosote should be taken during meals. This formula is Professor Bouchard's, as is also the following:

> Creosote, 13 grammes 50;
> Tincture of gentian, 20 grammes;
> Alcohol of Montpellier, 250 grammes;
> Wine of Malaga, q. s. for 1 liter.

This wine contains 20 centigrammes of creosote for each tablespoonful, and should be taken toward the end of the meal.

Cod-liver oil should also be used in many cases, and the following solutions may be employed:

Weak Solution:

Creosote, 10 grammes;
Cod-liver oil, 1 liter.

Two to four liqueur glassfuls a day.

Strong Solution:

Creosote, 50 grammes;
Cod-liver oil, 1 liter.

One to two tablespoonfuls a day.

Creosote can also be given in rum or syrup of gentian.

The rectal method has been tried extensively in France, and the following solution has been used:

Creosote, 16 grammes;
Oil of sweet almonds, 250 grammes.

One tablespoonful beaten up with the yellow of an egg and a cup of milk at 38°.

For hypodermic injections the following should be used:

Creosote, 16 grammes;
Olive oil, sterilized, 224 grammes.

Ten, 20, or 30 cubic centimeters may be injected.

It seems that the general counsel of the department of the Gard has offered to pay doctors in that part of France the sum of 25 centimes or five cents for each vaccination. Each vaccination would have to be followed by a visit eight days later, which would mean 12½ centimes for each call. The medical syndicate of the Gard has refused to consider this offer.

The well known dermatologist, Dr. Brocq, has published in a recent number of the *Presse Médicale* an article on the use of the issue as a therapeutic agent in certain arthritic conditions. Dr. Brocq began by saying that it would seem strange to speak of this ancient treatment, which was given up by well-nigh all doctors, though it was most enthusiastically recommended seventy years ago. Dr. Brocq recalls two cases in his practice which show the excellent results which may be obtained from this therapeutic agent. A patient, seventy-two years old, who had been overfond of the pleasures of life, and had suffered from gout and arteriosclerosis during twenty years, began to show signs of mental degeneracy. His digestion was somewhat impaired, he was affected with bronchitis and oppression, was somnolent and apathetic, and his general condition caused serious anxiety to his family. At this time he burned himself accidentally, and the wound did not heal, but continued to suppurate, notwithstanding the fairly careful dressings used. The general condition of the patient had improved, however, his intelligence having recovered its lucidity. He wished to have the wound closed, and this was done, but in a few days the general condition began to get worse, and after consulting with the family physician it was decided to put a cautery or issue on the arm, and the general condition improved immediately. In another case the patient was sixty-two years old, asthmatic and affected with vesical calculi. During the last four years his condition had grown steadily worse, and he had shown all the morbid signs of generalized arteriosclerosis. The following symptoms had been noticed: edema of the lower limbs with albuminuria varying in quantity from 10 centigrammes to one gramme, phlebitis, emboli, which caused pulmonary infarctus several times, pleurisy, etc. Three years ago there was an attack of apoplexy with loss of consciousness, aphasia, and right hemiplegia. Later there were symptoms of intestinal obstruction. The treatment of all this complexus consisted in the use of well-nigh complete milk regimen, some castor oil every morning, some hydrochlorate of quinine (25 to 50 centigrammes), dry cupping and pointed actual cautery, and sometimes wet cups. Last year a nurse gave him an injection of ether during an attack of epilepsy, and this produced an eschar four to five centimeters long and three centimeters wide. Suppuration set in after ten days, and the patient began to improve. After three months the cavity began to heal, and the condition of the patient seemed less good, and an issue was made on the left arm. Each time this issue does not suppurate well, the patient's health declines. Dr. Brocq spoke of this as showing the importance of studying the vital reactions of each patient, and not contenting oneself with examining the morbid anatomy resulting from certain diseases and the bacteriology which shows us their causes.